Self Diagnosis *Supported model*

SERVICE MANUAL

FE-2 CHASSIS

MODEL	COMMANDER	DEST	CHASSIS NO.	MODEL	COMMANDER	DEST	CHASSIS NO.
KV-21FX30B	*RM-887*	*FR*	*SCC-Q54G-A*	*KV-21FX30K*	*RM-887*	*OIRT*	*SCC-Q51J-A*
KV-21FX30E	*RM-887*	*ESP*	*SCC-Q53H-A*				

FD Trinitron



TRINITRON ® COLOR TV

SONY®

TABLE OF CONTENTS

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR THE CARBON PAINTED ON THE CRT, AFTER REMOVAL OF THE ANODE CAP.

WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE WORK TO AVOID POSSIBLE SHOCK HAZARD DUE TO LIVE CHASSIS, THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARKED ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION

APRES AVOIR DECONNECTE LE CAP DE'LANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

ATTENTION !!

AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÁSSIS SOUS TENTION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÈ LORS DE TOUT DÈPANNAGE LE CHÁSSIS DE CE RÈCEPTEUR EST DIRECTMENT RACCORDÈ Á L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS Á LA SECURITÈ!!

LES COMPOSANTS IDENTIFIÈS PAR UNE TRAME ET PAR UNE MARQUE ⚠ SUR LES SCHÈMAS DE PRINCIPE, LES VUES EXPLOSÈES ET LES LISTES DE PIECES SONT D'UNE IMPOR-TANCE CRITIQUE POUR LA SÈCURITÈ DU FONCTIONNEMENT, NE LES REMPLACER QUE PAR DES COMPSANTS SONY DONT LE NUMÈRO DE PIÈCE EST INDIQUÈ DANS LE PRÈSENT MANUEL OU DANS DES SUPPLÈMENTS PUBLIÈS PAR SONY.

ITEM MODEL	Television System	Stereo System	Channel Coverage	Color System
B	B/G/H, D/K, I, L	GERMAN/NICAM Stereo	VHF : E2-E12, F2-F10 UHF : E21-E69, F21-F69, B21-B69 CABLE TV : S01-S03, S1-S20, B-Q HYPER : S21-S41	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)
E	B/G/H, D/K	GERMAN/NICAM Stereo	VHF : E2-E12 UHF : E21-E69 CABLE TV : S01-S03, S1-S20 HYPER : S21-S41	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)
K	B/G/H, D/K	GERMAN/NICAM Stereo	VHF : E2-E12, R01-R12 UHF : E21-E69, R21-R69 CABLE TV : S01-S03, S1-S20 HYPER : S21-S41	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)

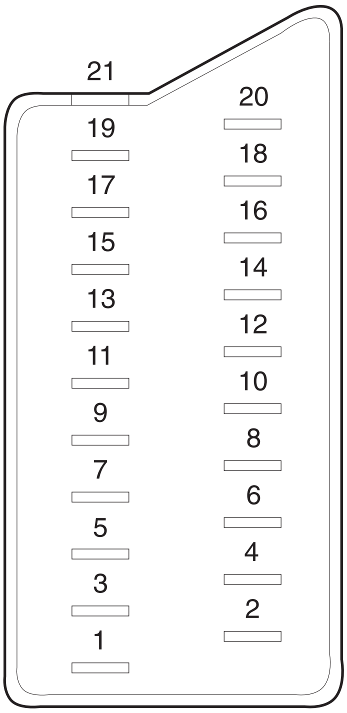
Picture Tube	Flat Display FD Trinitron Approx 55 cm (21 inches) (Approx 51 cm picture measured diagonally)
Input/Output Terminals [REAR]	
1: 21-pin Euro connector (CENELEC standard)	Inputs for Audio and Video signals. Inputs for RGB. Outputs of TV Video and Audio signals.
2: 21-pin Euro connector	Inputs for Audio and Video signals. Inputs for S Video. Outputs of TV Video and Audio signals. (selectable)
RCA Connectors	Variable Output for audio signals
Input/Output Terminals [FRONT]	
Headphone jack	stereo mini jack
Audio inputs	phono jacks
Video inputs	phono jacks

Sound output	
Right and Left speaker	2x14W (Music Power) 2x7W (RMS)
General Specifications	
Power Requirements	220 - 240V
Power Consumption	87 W
Dimensions	Approx 545x446x485 mm
Weight	Approx 26kg
Supplied Accessories	RM-887 Remote Commander (1) IEC designated R6 battery (2)
Other Features	TV system Autodetection, Teletext Smartlink
Remote Control System : Infrared Control	
Power requirements	3V dc 2 batteries IEC designation R6 (size AA)

Design and specifications are subject to change without notice.

Model Name / Item	KV-21FX30B	KV-21FX30E	KV-21FX30K
Pal Comb	OFF	OFF	OFF
PIP	OFF	OFF	OFF
RGB Priority	ON	ON	ON
Woofer Box	OFF	OFF	OFF
Scart 1	ON	ON	ON
Scart 2	ON	ON	ON
Front in (3)	ON	ON	ON
Scart 4	OFF	OFF	OFF
Projector	OFF	OFF	OFF
Norm B/G	ON	ON	ON
Norm I	ON	OFF	OFF
Norm D/K	ON	ON	ON
Norm AUS	OFF	OFF	OFF
Norm L	ON	OFF	OFF
Norm SAT	OFF	OFF	OFF
Norm M	OFF	OFF	OFF
Teletext	ON	ON	ON
Nicam Stereo	ON	ON	ON

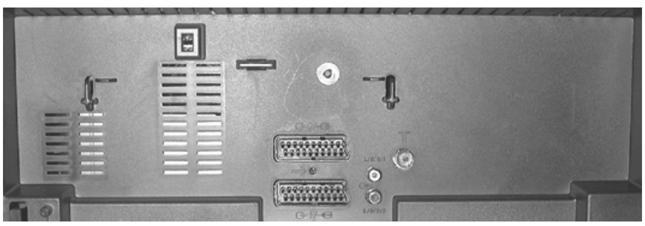
21 pin connector



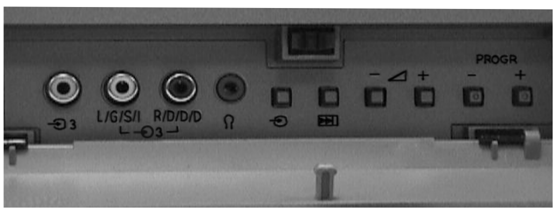
Pin No	1	2	4	Signal	Signal level
1	○	○	○	Audio output B (right)	Standard level : 0.5V rms Output impedence : Less than 1kohm*
2	○	○	○	Audio output B (right)	Standard level : 0.5V rms Output impedence : More than 10kohm*
3	○	○	○	Audio output A (left)	Standard level : 0.5V rms Output impedence : Less than 1kohm*
4	○	○	○	Ground (audio)	
5	○	○	○	Ground (blue)	
6	○	○	○	Audio input A (left)	Standard level : 0.5V rms Output impedence : More than 10kohm*
7	○	●	●	Blue input	0.7 +/- 3dB, 75 ohms positive
8	○	○	○	Function select (AV control)	High state (9.5-12V) : Part mode Low state (0-2V) : TV mode Input impedence : More than 10K ohms Input capacitance : Less than 2nF
9	○	○	○	Ground (green)	
10	○	○	○	Open	
11	○	●	●	Green	Green signal : 0.7 +/- 3dB, 75 ohms, positive
12	○	○	○	Open	
13	○	○	○	Ground (red)	
14	○	○	○	Ground (blanking)	
15	○	–	–	Red input	0.7 +/- 3dB, 75 ohms, positive
	–	○	○	(S signal Chroma input)	0.3 +/- 3dB, 75 ohms, positive
16	○	●	●	Blanking input (Ys signal)	High state (1-3V) Low state (0-0.4V) Input impedence : 75 ohms
17	○	○	○	Ground (video output)	
18	○	○	○	Ground (video input)	
19	○	○	○	Video output	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
20	○	–	–	Video input	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
	–	○	○	Video input Y (S signal)	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
21	○	○	○	Common ground (plug, shield)	

○ Connected ● Not Connected (open) * at 20Hz - 20kHz

Rear Connection Panel



Front Connection Panel



FE-2 SELF DIAGNOSTIC SOFTWARE

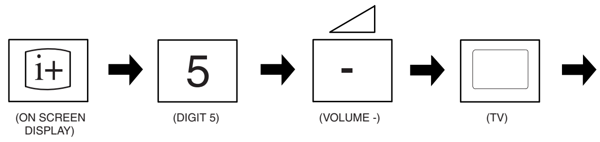
The identification of errors within the FE-2 chassis is triggered in one of two ways :- 1: Busy or 2: Device failure to respond to IIC. In the event of one of these situations arising the software will first try to release the bus if busy (Failure to do so will report with a continuous flashing LED) and then communicate with each device in turn to establish if a device is faulty. If a device is found to be faulty the relevant device number will be displayed through the LED (Series of flashes which must be counted) See table 1., non fatal errors are reported using this method.
Each time the software detects an error it is stored within the NVM. See Table 2.

Table 1

Error Message	LED Code
No error	00
Reserved	01
OCP (Over Current Protection)	02
Not Used	03
No Vertical Sync	04
IKR Error at power on	05
IIC bus clock and/or data lines low at power on	06
NVM no IIC bus acknowledge at power on	07
Not Used	08
Tuner no acknowledge at power on	09
Sound Processor Error	10
Jungle controller 8 volts error	11

How to enter into Table 2

1. Turn on the main power switch of the TV set and enter into the‘Stanby Mode’.
2. Press the following sequence of buttons on the Remote Commander.



3. The following table will be displayed indicating the error count.

Flash Timing Example : e.g. error number 3

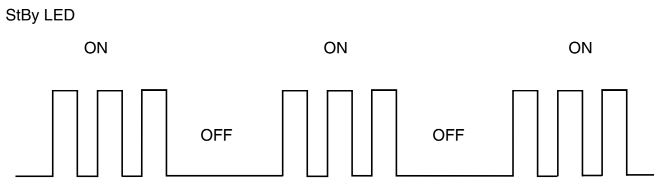


Table 2

ERROR MENU

E02	OCP	(0, 255)	0
E03	OVP N/A	(0, 255)	0
E04	VSYNC	(0, 255)	0
E05	IKR	(0, 255)	0
E06	IIC	(0, 255)	0
E07	NVM	(0, 255)	0
E08	JUNGLE	(0, 255)	0
E09	TUNER	(0, 255)	0
E10	SOUNDP	(0, 255)	0
E11	8V	(0, 255)	0

WORKING TIME

HOURS	2
MINUTES	11

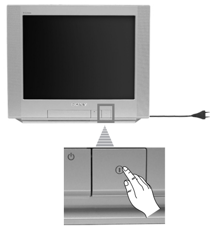
Note: To clear the error count data press ‘80’ on the Remote commander.

The operating instructions mentioned here are partial abstracts from the 'Operating Instruction Manual'. The page numbers of the 'Operating Instruction Manual' remain as in the manual.

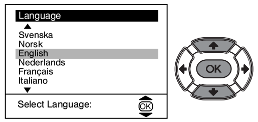
Switching On the TV and Automatically Tuning

The first time you switch on your TV, a sequence of menu screen appear on the TV enabling you to: 1) choose the language of the menu screen, 2) choose the country in which you wish to operate the TV, 3) adjust the picture slant 4) search and store all available channels (TV Broadcast) and 5) change the order in which the channels (TV Broadcast) appear on the screen.
However, if you need to change any of these settings, you can do that by selecting the appropriate option in the (Set Up menu) or by pressing the Auto Start Up Button on the TV set.

1 Connect the TV plug to the mains socket (220-240V AC, 50Hz)
Press the on/off button on the TV set to turn on the TV.
The first time you press this button, a **Language** menu displays automatically on the TV screen.

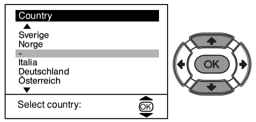


2 Press the ↓ or ↑ button on the remote control to select the language, then press the **OK** button to confirm your selection. From now on all the menus will appear in the selected language.



3 The **Country** menu appears automatically on the TV screen. Press the ↓ or ↑ button to select the country in which you will operate the TV set, then press the **OK** button to confirm your selection.

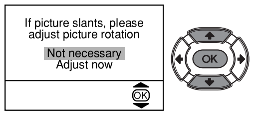
- If the country in which you want to use the TV set does not appear in the list, select "-" instead of a country.
- In order to avoid wrong teletext characters for Cyrillic languages we recommend to select Russia country in the case that your own country does not appear in the list.



4 Because of the earth's magnetism, the picture might slant. The **Picture Rotation** menu allows you to correct the picture slants if it is necessary.

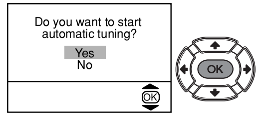
a) If it is not necessary, press ↓ or ↑ to select **Not necessary** and press **OK**.

b) If it is necessary, press ↓ or ↑ to select **Adjust now**, then press **OK** and correct any slant of the picture between –5 and +5 by pressing ↓ or ↑. Finally press **OK** to store.

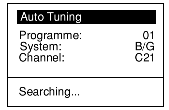


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5 The Auto Tuning menu appears on the screen. Press the **OK** button to select **Yes**.

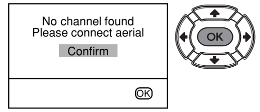


6 The TV starts to automatically search and store all available broadcast channels for you.



⚠ This procedure could take some minutes. Please be patient and do not press any button. Otherwise the automatic tuning will not be completed.

⚠ If no channels were found during the auto tuning process then a new menu appears automatically on the screen asking you to connect the aerial. Please connect the aerial (see page 6) and press **OK**. The auto tuning process will start again.

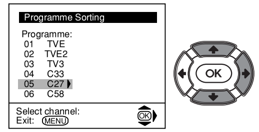


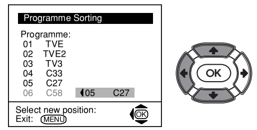
7 After all available channels are captioned and stored, the **Programme Sorting** menu appears automatically on the screen enabling you to change the order in which the channels appear on the screen.

a) If you wish to keep the broadcast channels in the tunned order, go to step 8.

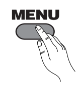
b) If you wish to store the channels in a different order:

1. Press the ↓ or ↑ button to select the programme number with the channel (TV Broadcast) you wish to rearrange, then press the → button.
2. Press the ↓ or ↑ button to select the new programme number position for your selected channel (TV Broadcast), then press ←.
3. Repeat steps b)1 and b)2 if you wish to change the order of the other channels.





8 Press the **MENU** button to remove the menu from the screen.

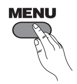


Your TV is now ready for use

Introducing and Using the Menu System

Your TV uses an on-screen menu system to guide you through the operations. Use the following buttons on the Remote Control to operate the menu system:

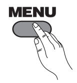
1 Press the **MENU** button to switch the first level menu on.



2 • To highlight the desired menu or option, press ↓ or ↑.
- To enter to the selected menu or option, press →.
- To return to the last menu or option, press ←.
- To alter settings of your selected option, press ↓ / ↑ / ← or →.
- To confirm and store your selection, press **OK**.

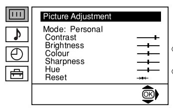
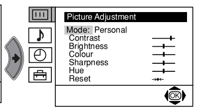


3 Press the **MENU** button to remove the menu from the screen.



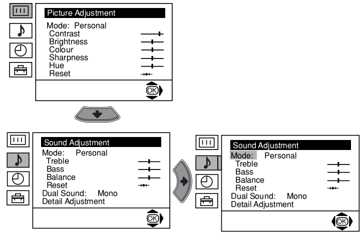
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Menu Guide

Level 1	Level 2	Level 3 / Function
		**PICTURE ADJUSTMENT** The “Picture Adjustment” menu allows you to alter the picture adjustments. To do this: after selecting the item you want to alter press →, then press repeatedly ↓ / ↑ / ← or → to adjust it and finally press **OK** to store the new adjustment. This menu also allows you to customise the picture mode based on the programme you are watching: ↓ **Personal** (for individual settings). ↓ **Live** (for live broadcast programmes). ↓ **Movie** (for films).

- ***Brightness, Colour*** *and* ***Sharpness*** *can only be altered if “Personal” mode is selected.*
- ***Hue*** *is only available for NTSC colour signal (e.g: USA video tapes).*
- *Select* ***Reset*** *and press* ***OK*** *to reset the picture to the factory preset levels.*

continued...

Level 1	Level 2	Level 3 / Function
		**SOUND ADJUSTMENT** The “Sound Adjustment” menu allows you to alter the sound adjustments. To do this: after selecting the item you want to alter, press →. then press repeatedly ↓ / ↑ / ← or → to adjust it and finally press **OK** to store the new adjustment.

This menu also contains two submenus as following:

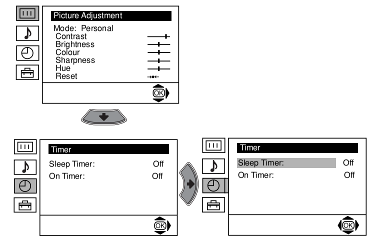
Mode → ↓ **Personal** (for individual settings)
↓ **Rock**
↓ **Pop**
↓ **Jazz**

Detail Adjustment →
- ↓ **Sound Effect:**
  - ↓ **Off:** Normal.
  - ↓ **Spatial:** Acoustic sound effect.
- ↓ **Auto volume:**
  - ↓ **Off:** Volume channel changes according to the broadcast signal.
  - ↓ **On:** Volume level of the channels will stay the same, independent of the broadcast signal (e.g. in the case of advertisements).
- ↓ **TV Speakers:**
  - ↓ **Off:** Sound from external amplifier connected to the audio outputs on the rear of the TV set.
  - ↓ **On:** Sound from the TV set.

- ***Treble*** *and* ***Bass*** *can only be altered if “Personal” mode is selected.*
- *Select* ***Reset*** *and press* ***OK*** *to reset the sound to the factory preset levels.*
- *In case of a bilingual broadcast select* ***Dual Sound*** *and set* ***A*** *for sound channel 1,* ***B*** *for sound channel 2 or* ***Mono*** *for mono channel if available. For a stereo broadcast you can choose* ***Stereo*** *or* ***Mono****.*

continued...

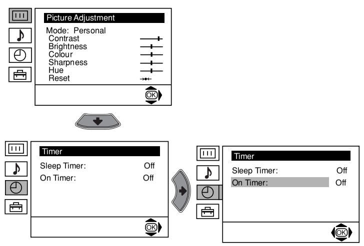
Level 1	Level 2	Level 3 / Function



SLEEP TIMER
The “Sleep Timer” option in the “Timer” menu allows you to select a time period for the TV to switch itself automatically into the standby mode.

To do this: after selecting the option press →, then press ↓ or ↑ to set the time period delay (max. of 4 hours) and finally press **OK** to store.

- *While watching the TV, you can press the* ⊡ *button on the remote control to display the time remaining.*
- *One minute before the TV switches itself into standby mode, the time remaining is displayed on the TV screen automatically.*

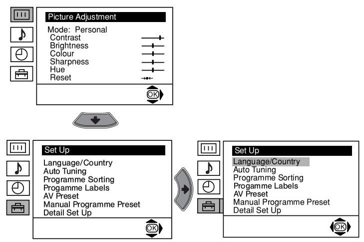


ON TIMER
The “On Timer” option in the “Timer” menu allows you to select a time period for the TV to switch itself automatically on from standby mode.

To do this: after selecting the option press →, then press ↓ or ↑ to set the time period delay (max. 12 hours) and press **OK** to store. Finally press the standby button **I/⏻** on the remote control. After the selected length of time the TV switches on automatically.

- *The standby indicator* ⏻ *on the TV set flashes regularly to indicate that “On Timer” is active.*
- *Any loss of power will cause these settings to be cleared.*

⚠ If you have not activated the “On Timer” option but the indicator ⏻ on the TV set flashes, please contact to your nearest Sony Service Centre.



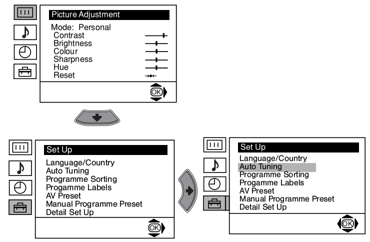
LANGUAGE / COUNTRY
The “Language/Country” option in the “Set Up” menu allows you to select the language that the menus are displayed in. It also allows you to select the country in which you wish to operate the TV set.

To do this: after selecting the option, press → and then proceed in the same way as in the steps 2 and 3 of the section “Switching On the TV and Automatically Tuning”.

continued...

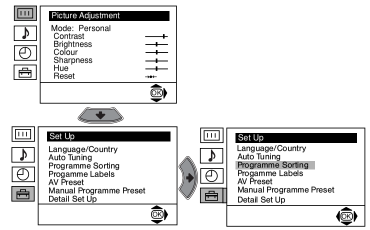
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Level 1	Level 2	Level 3 / Function



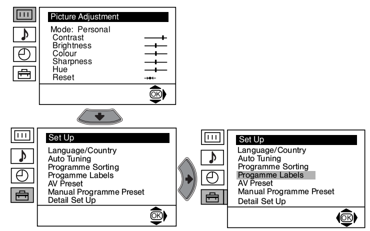
AUTO TUNING
The “Auto Tuning” option in the “Set Up” menu allows you to automatically search for and store all available TV channels.

To do this: after selecting the option, press → and then proceed in the same way as in TV steps 5 and 6 of the section “Switching On the TV and Automatically Tuning”.



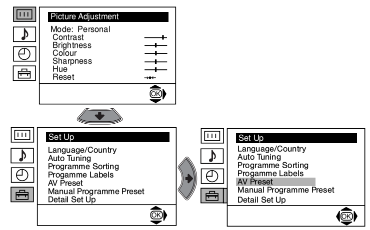
PROGRAMME SORTING
The “Programme Sorting” option in the “Set Up” menu allows you to change the order in which the channels (TV Broadcast) appear on the screen.

To do this: after selecting the option, press → and then proceed in the same way as in step 7 b) of the section “Switching On the TV and Automatically Tuning”.



PROGRAMME LABELS
The “Programme Labels” option in the “Set Up” menu allows you to name a channel using up to five characters (letters or numbers).

To do this:
1 After selecting the option, press →, then press ↓ or ↑ to select the programme number with the channel you wish to name.
2 Press →. With the first element of the **Label** column highlighted, press ↓ or ↑ to select a letter or number (select “-“ for a blank), then press → to confirm this character. Select the other four characters in the same way. Finally press **OK** to store.

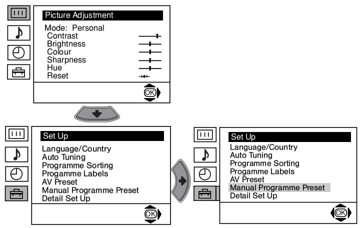


AV PRESET
The “AV Preset” option in the “Set Up” menu allows you to designate a name to the external equipment you have connected to the sockets of this TV.

To do this:
1 After selecting the option, press →, then press ↓ or ↑ to select the input source you wish to name (**AV1** and **AV2** are for the rear Scarts and **AV3** for front connectors). Then press →.

continued...

Level 1	Level 2	Level 3 / Function



b) Label a channel using up to five characters.

To do this: Highlighting the **Programme** option, press the **PROGR +/-** button to select the programme number with the channel you wish to name. When the programme you want to name appears on the screen, select the **Label** option and press →. Next press ↓ or ↑ to select a letter, number or "-" for a blank. Press → to confirm this character. Select the other four characters in the same way. After selecting all the characters, press **OK** twice to store.

c) Normally the automatic fine tuning (AFT) is operating, however you can manually fine tune the TV to obtain a better picture reception in the case that the picture is distorted.

To do this: while watching the channel (TV Broadcast) you wish to fine tune, select the **AFT** option and press →. Next press ↓ or ↑ to adjust the fine tuning between -15 and +15. Finally press **OK** twice to store.

d) Skip any unwanted programme numbers when they are selected with the PROGR +/- buttons.

To do this: Highlighting the **Programme** option, press the **PROGR +/-** button to select the programme number you want to skip. When the programme you want to skip appears on the screen, select the **Skip** option and press →. Next press ↓ or ↑ to select **Yes**. Finally press **OK** twice to confirm and store.

To cancel this function afterwards, select "No" instead of "Yes" in the step above.

e) This option allows you to view and record correctly scrambling channels when using a decoder connected to the Scart ⊖2/⊖S directly or through a VCR.

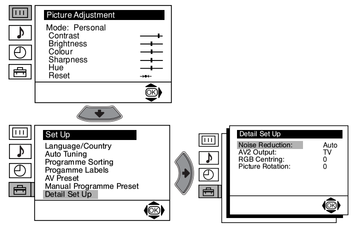
ⓘ This option is only available depending on the country you have selected in the "Language/Country" menu.

To do this: select the **Decoder** option and press →. Next press ↓ or ↑ to select **On**. Finally press **OK** twice to confirm and store.

To cancel this function afterwards, select "Off" instead of "On" in the step above.

continued...

Level 1	Level 2	Level 3 / Function

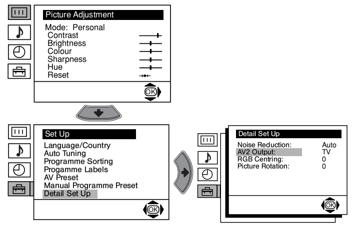


NOISE REDUCTION

The "Noise Reduction" option in the "Detail Set Up" menu allows to reduce automatically the picture noise in case of a weak broadcasting signal.

To do this: after selecting the option, press →. Then press ↓ or ↑ to select **Auto**. Finally press **OK** to confirm and store.

To cancel this function afterwards, select "Off" instead of "Auto" in the step above.



AV2 OUTPUT

The "AV2 Output" option in the "Detail Set Up" menu allows you to select the source to be output from the Scart connector ⊖2/⊖S in order you can record from this Scart any signal coming from the TV or from an external equipment connected to the Scart connector ⊖1/⊖ or front connectors ⊖3 and ⊖ 3.

ⓘ If your VCR supports Smartlink, this procedure is not necessary.

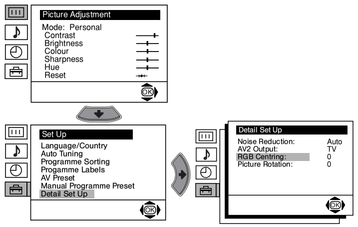
To do this: after selecting the option, press →. Then press ↓ or ↑ to select the desired output signal: **TV, AV1, AV3** or **AUTO**.

⚠ If you select "AUTO", the output signal will always be the same one that is displayed on the screen.

⚠ If you have connected a decoder to the Scart ⊖2/⊖S or to a VCR connected to this Scart, please remember to change back the "AV2 Output" to "AUTO" or "TV" for a correct unscrambling.

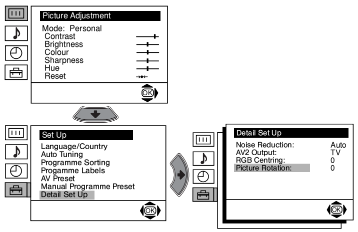
continued...

Level 1	Level 2	Level 3 / Function



RGB CENTRING
When connecting an RGB source, such as a "PlayStation", you may need to readjust the horizontal position of the picture. In that case, you can readjust it through the "RGB Centring" option in the "Detail Set Up".

To do this: while watching an RGB source select the "RGB Centring" option and press ➡. Then press ⬇ or ⬆ to adjust the centre of the picture between –10 and +10. Finally press **OK** to confirm and store.



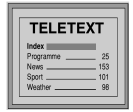
PICTURE ROTATION
Because of the earth's magnetism, the picture might slant. In this case, you can correct the pictures slant by using the option "Picture Rotation" in the "Detail Set Up" menu.

To do this: after selecting the option, press ➡. Then press ⬇ or ⬆ to correct any slant of the picture between -5 and +5 and finally press **OK** to store.

Teletext

Teletext is an information service transmitted by most TV stations. The index page of the teletext service (usually page 100) gives you information on how to use the service. To operate teletext, use the remote control buttons as indicated below.

Make sure to use a channel (TV Broadcast) with a strong signal, otherwise teletext errors may occur.



To Switch On Teletext :
After select the TV channel which carries the teletext you wish to view, press ⊜.

To Select a Teletext page:
Input 3 digits for the page number, using the numbered buttons.
- *If you have made a mistake, retype the correct page number.*
- *If the counter on the screen continues searching, it is because this page is not available. In that case, input another page number*

To access the next or preceding page:
Press **PROGR +** (≡▲) or **PROGR -** (≡▼).

To superimpose teletext on to the TV:
Whilst you are viewing teletext, press ⊜. Press it again to cancel teletext mode.

To freeze a teletext page:
Some teletext pages have sub-pages which follow on automatically. To stop them, press ⊕/⊜. Press it again to cancel the freeze.

To reveal concealed information (e.g: answer to a quiz):
Press ⊞/?. Press it again to conceal the information.

To Switch Off Teletext:
Press ▢.

Fastext

Fastext service lets you access pages with one button push.
While you are in Teletext mode and Fastext is broadcast, a colour coded menu appears at the bottom of the teletext page. Press the colour button (red, green, yellow or blue) to access the corresponding page.

Specifications

TV system:
Depending on your country selection:
B/G/H, D/K

Colour system:
PAL, SECAM
NTSC 3.58, 4.43 (only Video In)

Channel Coverage:

VHF:	E2-E12
UHF:	E21-E69
CATV:	S1-S20
HYPER:	S21-S41
D/K:	R1-R12, R21-R69

Picture Tube:
Flat Display FD Trinitron
21" (approx. 55 cm. measured diagonally)

Rear Terminals

1/ : 21-pin scart connector (CENELEC standard) including audio/video input, RGB input, TV audio/video output.

2/ : 21-pin Scart connector (CENELEC standard) including audio / video input, S video input, selectable audio / video output and Smartlink interface.

audio outputs (Left/ Right) - phono jacks

Front Terminals

3 video input – phono jack
3 audio input – phono jacks
headphones jack

Sound Output:
2 x 14 W (music power)
2 x 7 W (RMS)

Power Consumption:
60 W

Standby Power Consumption:
0.5 W

Dimensions (w x h x d) :
Approx. 545 x 446 x 485 mm.

Weight:
Approx. 26 Kg.

Accessories supplied:
1 Remote Control (RM-887)
2 Batteries (IEC designated)

Other features:
- Teletext, Fastext, TOPtext
- Sleep Timer
- Wake UP Timer
- Smartlink (direct link between your TV set and a compatible VCR. For more information on Smartlink, please refer to the Instruction Manual of your VCR).
- TV system Autodetection.

Design and specifications are subject to change without notice.

Ecological Paper- Totally Chlorine Free

Troubleshooting

Here are some simple solutions to the problems which may affect the picture and sound.

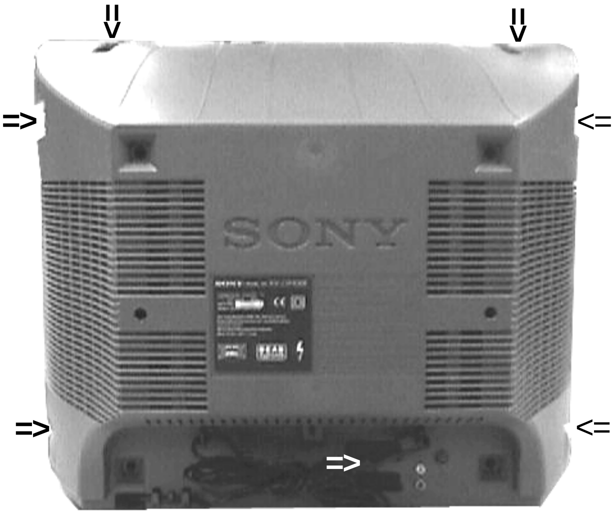
Problem	Solution
No picture (screen is dark) and no sound.	• Check the aerial connection. • Plug the TV in and press the button on the front of TV. • If the standby indicator is on, press I/ button on the remote control.
Poor or no picture (screen is dark), but good sound.	• Using the menu system, select the "Picture Adjustment" menu and select "Reset" to return to the factory settings.
No picture or no menu information from equipment connected to the Scart connector.	• Check that the optional equipment is on and press the button repeatedly on the remote control until the correct input symbol is displayed on the screen.
Good picture, no sound.	• Press the +/- button on the remote control. • Check that "TV Speakers" is "On" on the "Sound Adjustment" menu. • Check that headphones are not connected.
No colour on colour programmes.	• Using the menu system, select the "Picture Adjustment" menu and select "Reset" to return to factory settings.
Distorted picture when changing programmes or selecting teletext.	• Turn off any equipment connected to the Scart connector on the rear of the TV.
Wrong characters appear when viewing teletext.	• Using the menu system, enter to the "Language/ Country" menu and select the country in which you operate the TV set. For Cyrillic languages, we agreement to select Russia country in the case that your own country does not appear in the list.
Picture slanted	• Using the menu system, select the "Picture Rotation" option in the "Detail Set Up" menu to correct the picture slant.
Noisy picture when viewing a TV channel.	• Using the menu system, select the "Manual Programme Preset" menu and adjust Fine Tuning (AFT) to obtain better picture reception. • Using the menu system, select the "Noise Reduction" option in the "Detail Set Up" menu and select "Auto" to reduce the noise in the picture.
No unscrambling or unstable picture whilst viewing a scrambling channel with a decoder connected through the Scart connector 2/ .	• Using the menu system, select the "Set Up" menu. Then enter to "Detail Set Up" option and set "AV2 Output" to "TV".
Remote control does not function.	• Replace the batteries.
The standby indicator on the TV flashes even though the "On Timer"	• Contact to your nearest Sony service centre.

In case of problems, have your TV serviced by qualified personnel. Never open the casing yourself.

GB

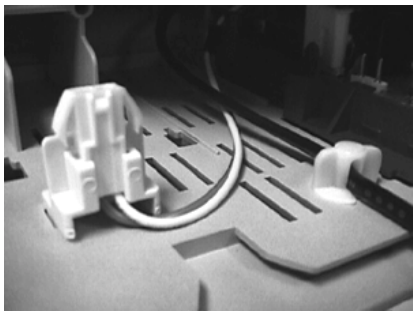
SECTION 2 DISASSEMBLY

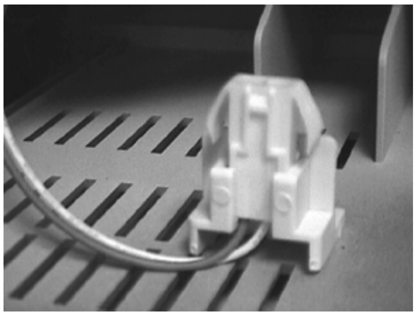
2-1. Rear Cover Removal



Release the mains power cable from its securing posts. Remove the rear cover fixing screws indicated. Pull the rear cover away from the front beznet. Take care when removing the rear cover not to damage the speaker cables as speakers are fitted inside the rear cover.

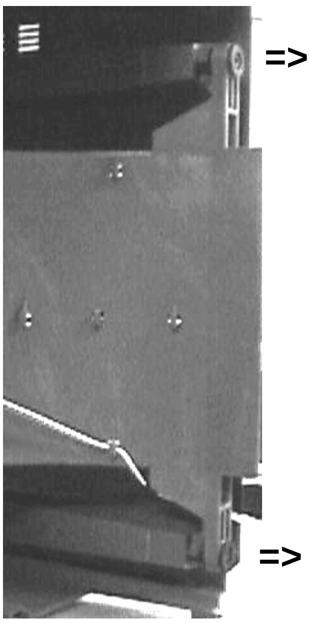
2-2. Speaker Connector Disconnection





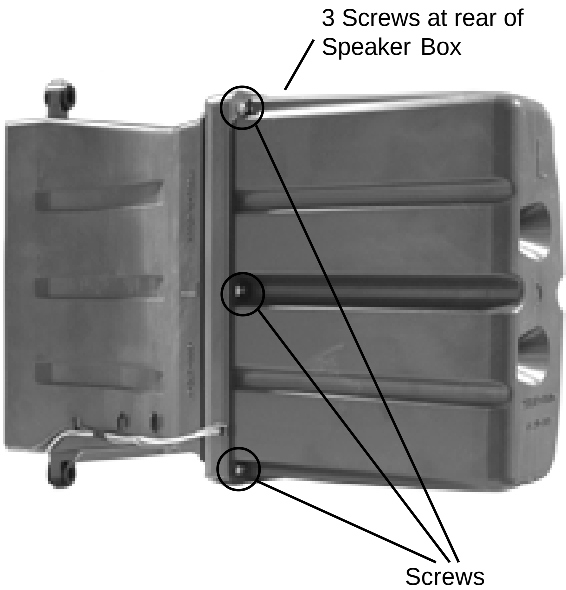
Before completely removing the rear cover disconnect the speaker connectors which are located on the inside base of the beznet.

2-3. Speaker Box Removal



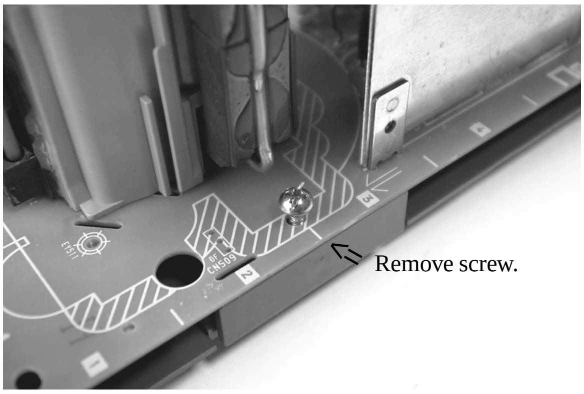
To remove the speaker box pull forward in the direction of the arrows while holding the rear cover. Ensure the weight is supported as the box is pulled from its mountings.

2-4. Speaker Box Disassembly

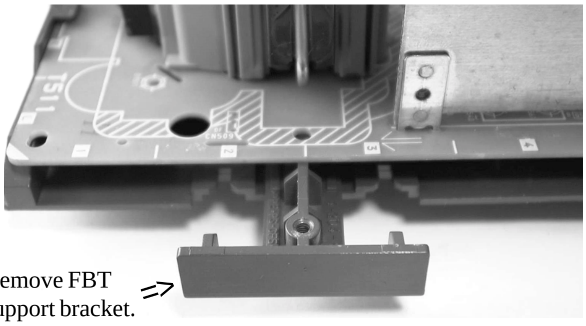


To gain access to the speaker remove the six screws and pull the two halves of the speaker box apart.

2-5. A Board PWB Removal [Step 1]

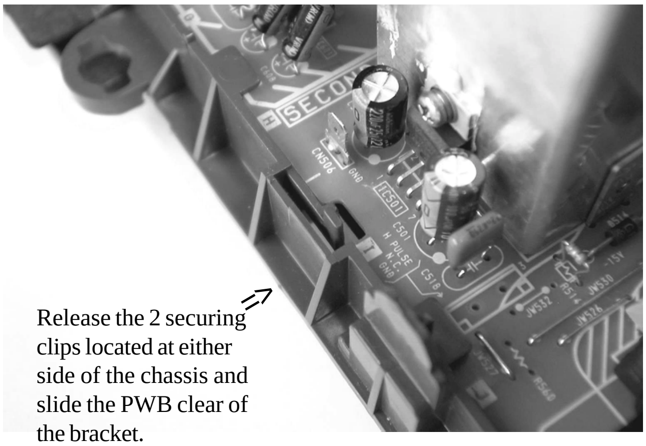


Remove screw.



Remove FBT support bracket.

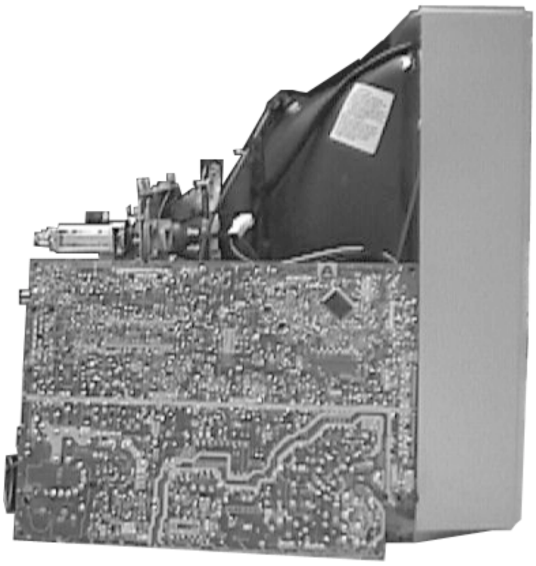
2-6. A Board PWB Removal [Step 2]



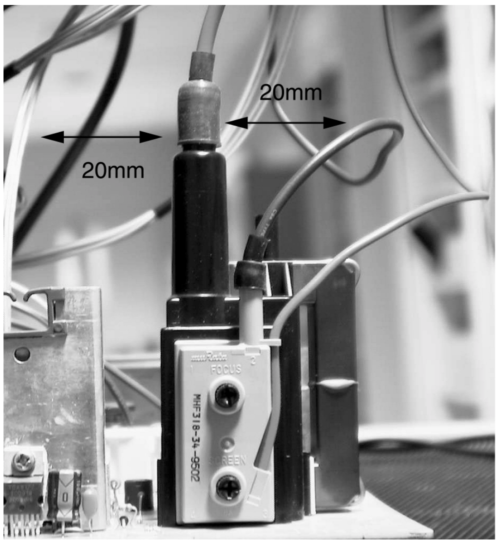
Release the 2 securing clips located at either side of the chassis and slide the PWB clear of the bracket.

2-7. Service Position

Place the A Board PWB in the position indicated to carry out servicing.



2-8. Wire Dressing

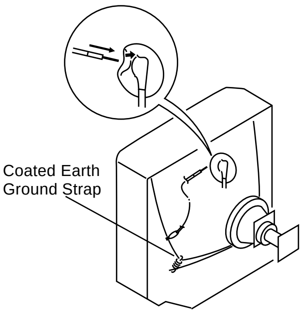


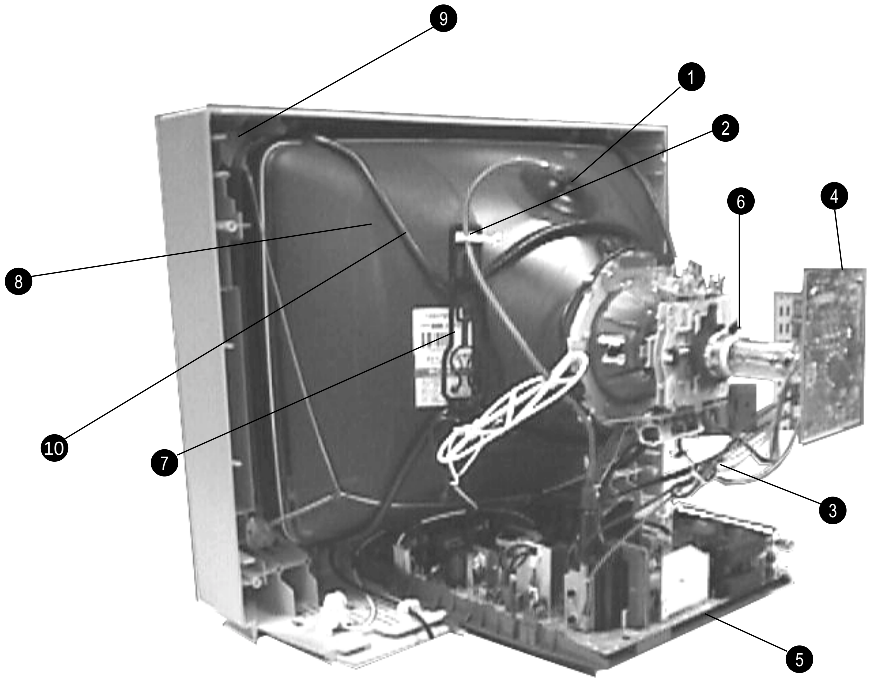
Ensure that all wires do not touch heat-sinks and high temperature hot spots. All wires must be kept at a minimum distance of 20mm away from the EHT lead.

2-9. Picture Tube Removal

WARNING:
BEFORE REMOVING
THE ANODE CAP

High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT ***before*** attempting to remove the anode cap. Short between anode and CRT coated earth ground strap.

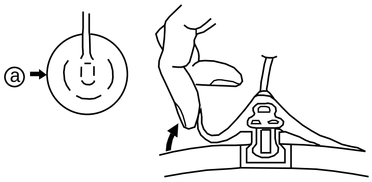


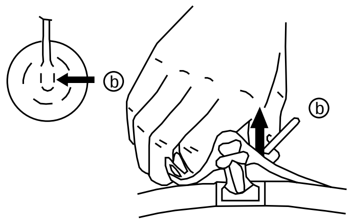


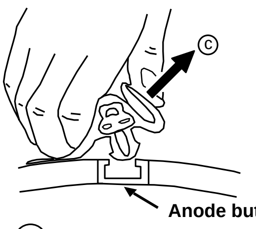
1. Discharge the anode of the CRT and remove the anode cap.
2. Release the EHT lead from its CRT support bracket.
3. Unplug all interconnecting leads from the Deflection yoke, degaussing coils and CRT grounding strap.
4. Remove the C Board from the CRT.
5. Remove the chassis assembly.
6. Loosen the Deflection yoke fixing screw and remove.
7. Remove the Degaussing Coil holders.
8. Place the set with the CRT face down on a cushion.
9. Unscrew the four CRT fixing screws [located on each CRT corner] and remove the CRT.
10. Remove the Degaussing Coils.
    Remove the CRT grounding strap and spring tentioners.
    [Take care not to handle the CRT by the neck.]

Removal of the Anode-Cap

*** REMOVING PROCEDURES.**







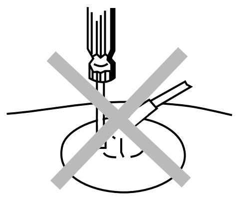
① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ

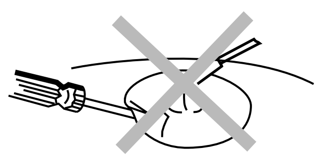
② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ

③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ⓒ

How to handle the Anode-Cap

1. To prevent damaging the surface of the anode-cap do not use sharp materials.
2. Do not apply too great a pressure on the rubber, as this may cause damage to the anode connector.
3. A metal fitting called a shatter hook terminal is fitted inside the rubber cap.
4. Do not turn the rubber foot over excessively, this may cause damage if the shatter hook sticks out.





SECTION 3 SET-UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there are specific instructions to the contrary, carry out these adjustments with the rated power supply.
- Unless there are specific instructions to the contrary, set the controls and switches to the following settings :

Contrast .... 80% [or remote control ormal]

Brightness 50%

Carry out the adjustments in the following order :

3-1. Beam Landing.
3-2. Convergence.
3-3. Focus.
3-4. White Balance.

Note : Test equipment required.
1. Color bar/pattern generator.
2. Degausser.
3. Oscilloscope.
4. Digital multimeter.

Preparation:

1. In order to reduce the influence of geomagnetism on the set's picture tube, face it in an easterly or westerly direction.
2. Switch on the set's power and degauss with the degausser.

3-1. Beam Landing

1. Input an all white signal from the pattern generator. Set the Contrast and Brightness to normal.
2. Set the pattern generator raster signal to Red.
3. Move the deflection yoke forward and adjust with the purity control so that the Red is at the centre and the Blue and Green take up equally sized areas on each side of the screen. [See Fig.3-1 - 3-3].
4. Move the deflection yoke backwards and adjust so that the entire screen becomes Red. [See Fig.3-1]
5. Switch the raster signal to Blue, then to Green and verify the condition.
6. When the position of the deflection yoke has been determined, fasten the deflection yoke with the screws.
7. If the beam does not land correctly in all the corners, use a magnet to correct it. [See Fig.3-4]

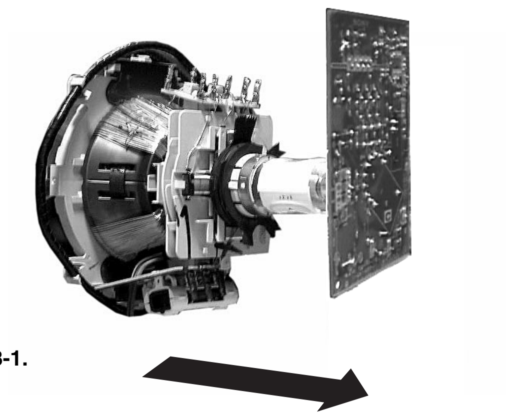


Fig. 3-1.

Caution :

High voltages are present on the Deflection yoke terminals - take care when handling the Deflection yoke whilst carrying out adjustments.

Fig. 3-2.

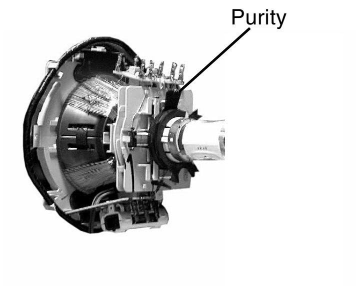
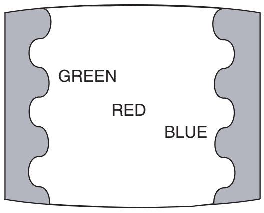


Fig. 3-3.



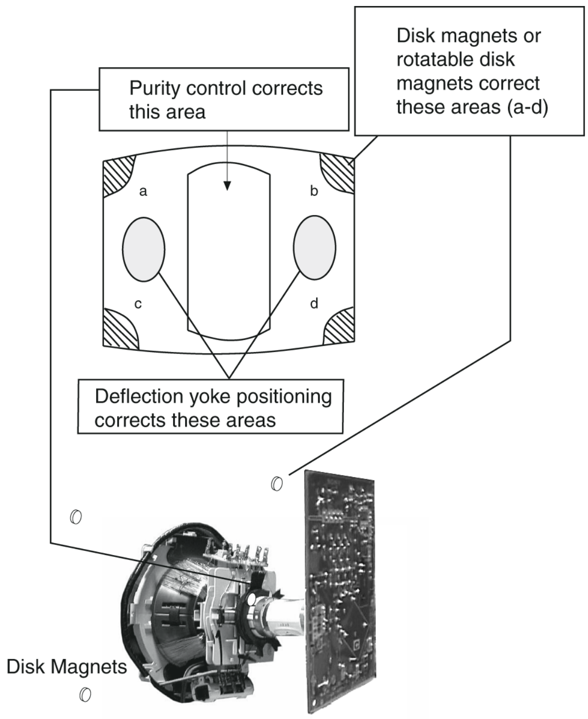


Fig.3-4

3-2. Convergence

Preparation:

- Before starting this adjustment, adjust the focus, horizontal size and vertical size.
- Minimize the Brightness setting.
- Input a dot pattern from the pattern generator.

Horizontal and Vertical Static Convergence

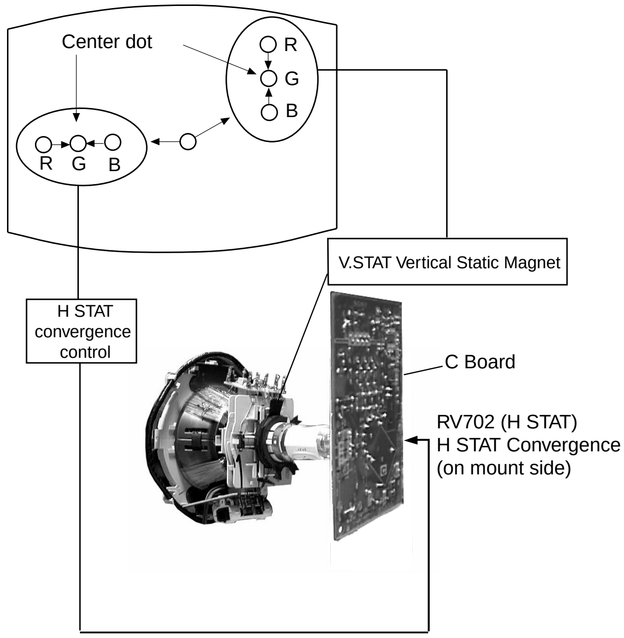
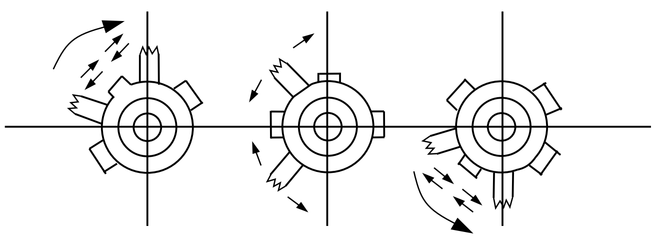


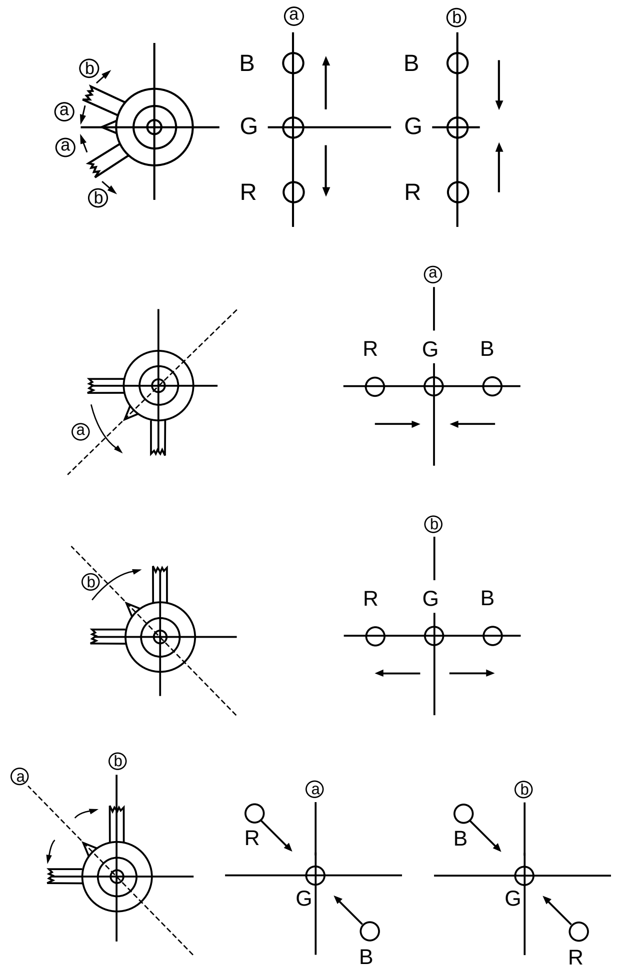
Fig.3-5

1. [Moving horizontally], adjust the H.STAT control so that the Red, Green and Blue points are on top of each other at the centre of the screen.
2. [Moving vertically], adjust the V.STAT magnet so that the Red, Green and Blue points are on top of each other at the centre of the screen.
3. If the H.STAT variable resistor is unable to bring the Red, Green and Blue points together at the centre of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V.STAT magnet in the manner indicated below.
   [In this case, the H.STAT variable resistor and the V.STAT magnet influence each other].

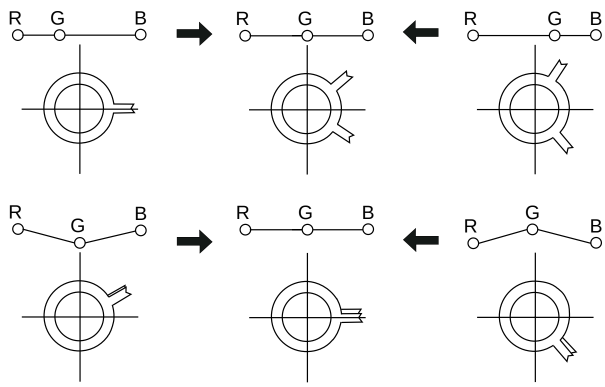
- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.



4. If the V.STAT magnet is moved in the direction of the (a) and (b) arrows, the Red, Green and Blue points move as indicated below.



Operation of the BMC (Hexapole) magnet.



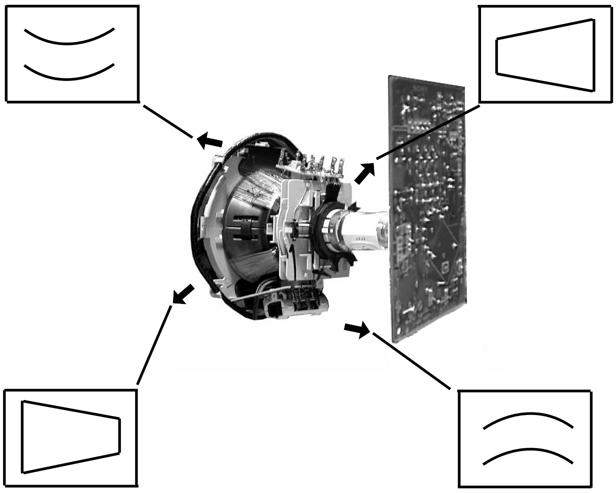
The movement of the magnets interact with each other and so the respective dot position should be monitored while carrying out this adjustment.
Use the H.STAT VR to adjust the Red, Green and Blue dots so that they coincide at the centre of the screen
(by moving the dots in the horizontal direction).

Geometry Adjustment.

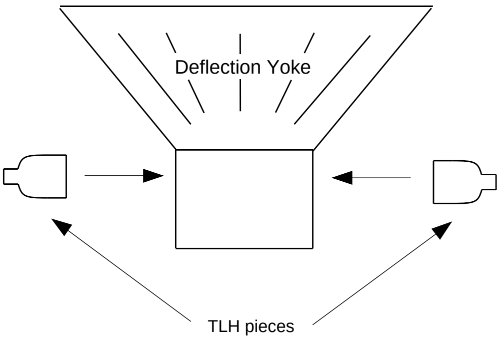
Preparation:

Before starting this adjustment, adjust the horizontal and vertical static convergence.

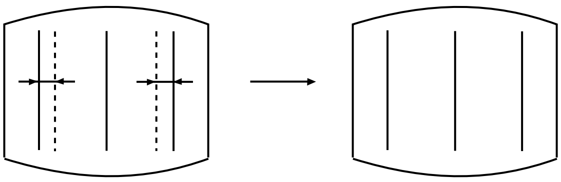
1. Remove the deflection yoke spacer.
2. Tilt the deflection yoke as indicated in the figure below and optimise the geometry.
   Tilting the DY Up and Down will balance the upper and lower pin adjustment.
   Tilting the DY Left and Right will balance the H-Trap adjustment.
3. Re-install the deflection yoke spacer.



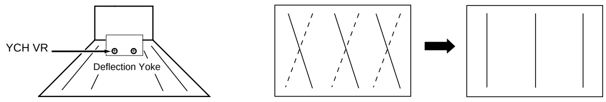
HTIL Adjustment



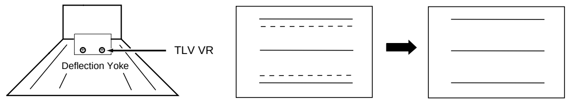
HTIL correction can be performed by adding a TLH correction assembly to the Deflection yoke.



YCH Adjustment

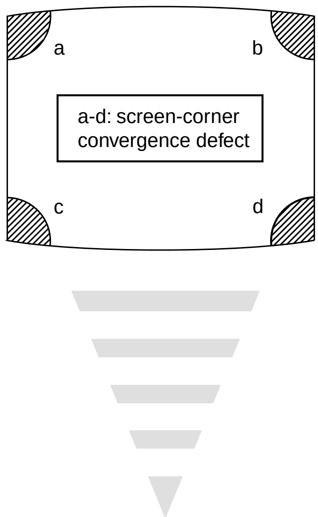


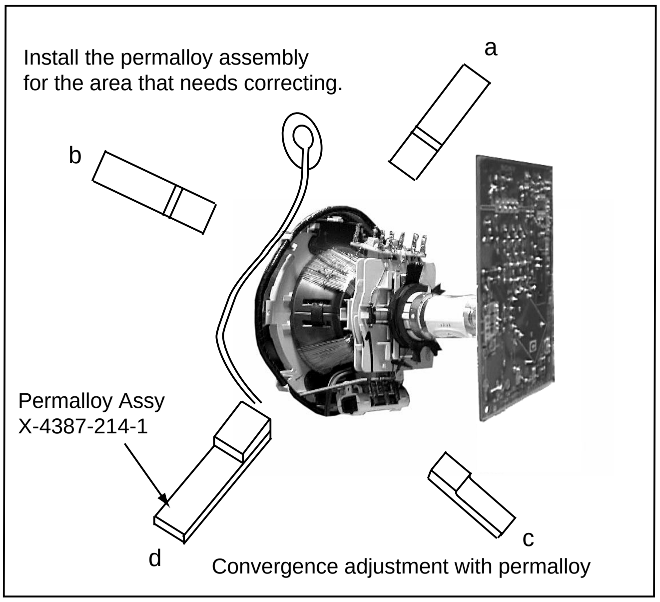
TLV Adjustment



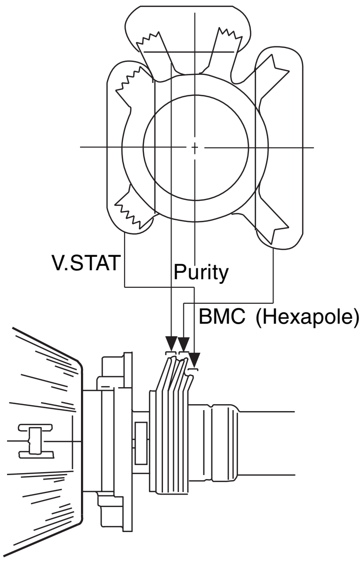
Screen Corner Convergence

If you are unable to adjust the corner convergence properly, this can be corrected with the use of permalloy magnets.



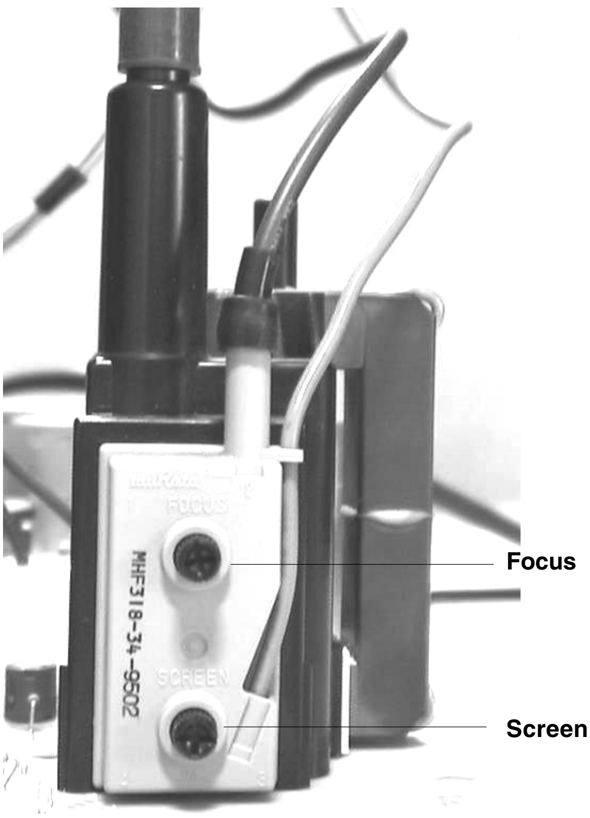


Layout of each control



3-3. Focus Adjustment

1. Receive a television broadcast signal.
2. Normalize the picture setting.
3. Adjust the focus control located on the flyback transformer to obtain the best focus at the centre of the screen.
   Bring only the centre area of the screen into focus, the magenta-ring appears on the screen. In this case, adjust the focus to optimize the screen uniformly.



3-4. Screen (G2), White Balance

[Adjustment in the service mode using the remote commander]

G2 adjustment

1. Input a dot signal from the pattern generator.
2. Set the Picture, Brightness and Colour to minimum.
3. Apply 175V DC from an external power supply to the R, G and B cathodes of the CRT.
4. Whilst watching the picture, adjust the G2 control [SCREEN] located on the Flyback Transformer to the point just before the flyback return lines disappear.

White balance adjustment for TV mode

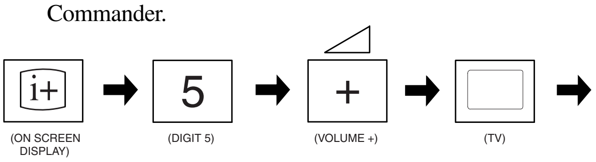
1. Input an all-white signal from the pattern generator.
2. Enter into the ‘Service Mode’ by pressing ‘TEST’, ‘TEST’ and ‘MENU’ on the Service Commander.
3. Select ‘Service’ from the on screen menu display and press the right arrow button on the remote commander.
4. The ‘Service’ menu will appear on the screen.
   [See Page 19]
5. Set the ‘Contrast’ to MAX.
6. Set the ‘R-Drive’ to 25.
7. Adjust the ‘G-Drive’ and the ‘B-Drive’ so that the white balance becomes optimum.
8. Press the ‘OK’ button to write the data for each item.
9. Set the ‘Contrast’ to MIN.
10. Adjust the ‘G-Cutoff’, and the ‘R-Cutoff’ with the left and right buttons on the remote commander so that the white balance becomes optimum.
11. Press the ‘OK’ button to write the data for each item.

4-1. Electrical Adjustments

Service adjustments to this model can be performed using the suppliedemote Commander RM-887.

How to enter into the Service Mode

1. Turn on the main power switch and enter into the stand-by mode.
2. Press the following sequence of buttons on the Remote Commander.



'TT—' will appear in the upper right corner of the screen. Other status information will also be displayed.

3. Press 'MENU' on the remote commander to obtain the following menu on the screen.

```
Geometry
Service
Design
Status
Sound
IF adjust
Error Menu

FE-2 Stereo v1.30
Factory data     FFh    FFh
MSP Device : MSP3411G
```

4. Move to the corresponding adjustment item using the up or down arrow buttons on the Remote Commander.
5. Press the right arrow button to enter into the required menu item.
6. Press the 'Menu' button on the Remote Commander to quit the Service Mode when all adjustments have been completed.

Note :

- Before performing any adjustments ensure that the correct model has been selected in the 'Model Setting' menu.
- After carrying out the service adjustments, to prevent the customer accessing the 'Service Menu' switch the TV set OFF and then ON.

ERROR MENU

E02	OCP	(0, 255)	0
E03	OVP N/A	(0, 255)	0
E04	VSYNC	(0, 255)	0
E05	IKR	(0, 255)	0
E06	IIC	(0, 255)	0
E07	NVM	(0, 255)	0
E08	JUNGLE	(0, 255)	0
E09	TUNER	(0, 255)	0
E10	SOUNDP	(0, 255)	0
E11	8V	(0, 255)	0

WORKING TIME

HOURS	2
MINUTES	11

SERVICE

Offset-R	(0, 63)	Adj
Offset-G	(0, 63)	Adj
R-Drive	(0, 63)	25
G-Drive	(0, 63)	Adj
B-Drive	(0, 63)	Adj
Peak-Freq	(0, 3)	0
Luma-Delay	(0, 15)	8
SC0	(0, 3)	2
White-Peak	(0, 15)	15
Subcont	(0, 15)	4
Subright	(0, 63)	31
Subcol	(0, 63)	Adj
Subsharp	(0, 63)	31
Cutoff Br.	(0, 63)	60
Br OSD	(0, 15)	10
Br TXT	(0, 15)	9

GEOMETRY

V-Linearity	(0, 63)	Adj
V-Scroll	(0, 63)	32
Left-HBlk	(0, 15)	8
Right-HBlk	(0, 15)	6
V-Angle	(0, 63)	Adj
V-Bow	(0, 63)	Adj
H-Centre	(0, 63)	Adj
H-Size	(0, 63)	Adj
Pin-Amp	(0, 63)	Adj
U-Corner-Pin	(0, 63)	Adj
L-Corner-Pin	(0, 63)	Adj
Pin Phase	(0, 63)	Adj
V-Slope	(0, 63)	35
V-Size	(0, 63)	Adj
S-Correction	(0, 63)	Adj
V-Centre	(0, 63)	Adj
V-Zoom	(0, 63)	23
Magenta	(0, 63)	40

IF ADJUST

AGC Adjust	(-16, +15)	+0
Automute		1
Audio Gain		0
L Gating		0

Sub Brightness Adjustment

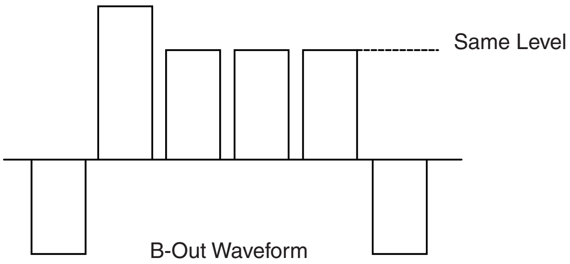
1. Input a Monoscope pattern.
2. Press 'TEST' 'TEST' 13 on the Remote Commander.
3. Adjust the 'Sub-Brightness' data so that there is barely a difference between the 0 IRE and 10 IRE signal levels.

Sub Contrast Adjustment

1. Input a video signal that contains a small 100% white area on a black background.
2. Connect an digital voltmeter to Pin 10 of J701 [C Board].
3. Adjust the Sub-Contrast ['TT11'] to obtain a voltage of 95 +/-5V.

Sub Colour Adjustment

1. Receive a PAL colour bar signal.
2. Connect an oscilloscope to Pin 5 of CN003 [A Board].
3. Enter into the 'Service' service menu.
4. Adjust the 'Sub Colour' data so that the Cyan, Magenta and Blue colour bars are of equal levels as indicated below.

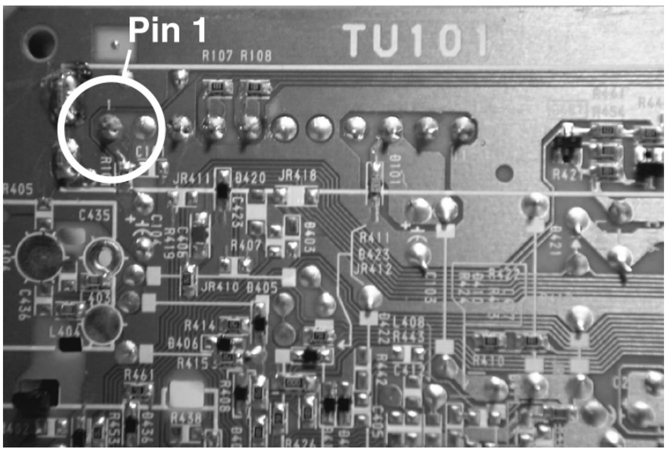


Tuner AGC Adjustment

Note:

There should be no need to adjust the AGC as this is pre-adjusted during manufacture of the FRONTEND. If the AGC does need adjustment then follow steps 1. to 4. below.

1. Receive a signal of 62dBuV / 75 ohm terminated via the tuner antenna socket.
2. Connect a voltmeter to pin1 of TU101 [print side of A Board] or to the AGC pin of CN001 [mount side of A Board].
3. Confirm that the AGC voltage is 3.5volts +/- 0.3volts.
4. If adjustment is required, then re-adjust the AGC variable resistor (located at the top rear of the FRONTEND) to obtain a voltage of 3.5V +/- 0.3V.

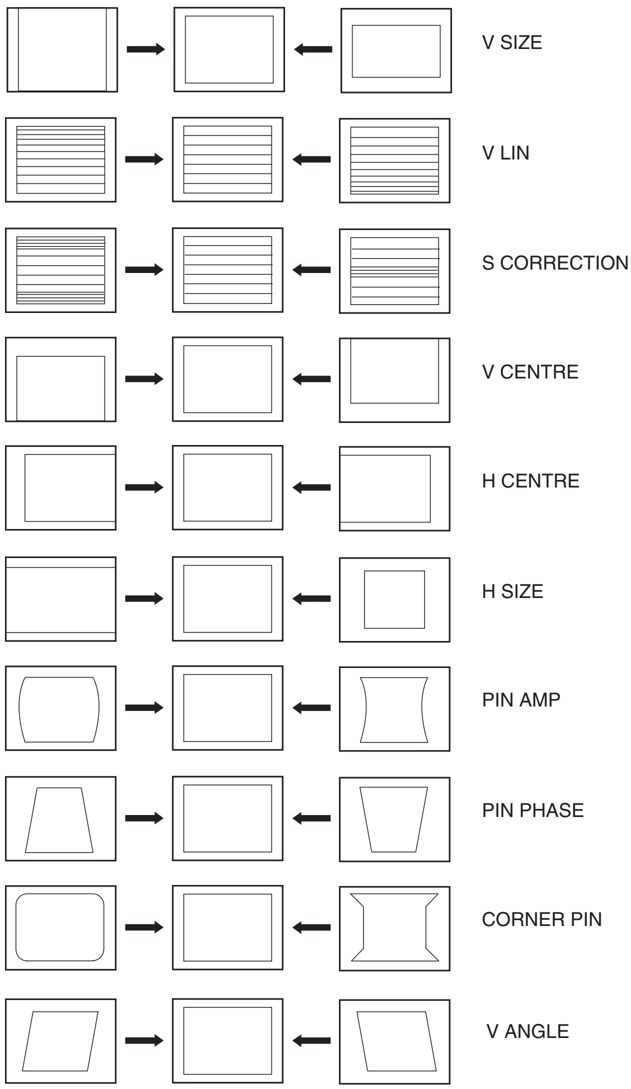


[Print side of A board]

Deflection System Adjustment

1. Enter into the 'Geometry' service menu.
2. Select and adjust each item in order to obtain the optimum image.

GEOMETRY		
V-Linearity	(0, 63)	Adj
V-Scroll	(0, 63)	32
Left-HBlk	(0, 15)	8
Right-HBlk	(0, 15)	6
V-Angle	(0, 63)	Adj
V-Bow	(0, 63)	Adj
H-Centre	(0, 63)	Adj
H-Size	(0, 63)	Adj
Pin-Amp	(0, 63)	Adj
U-Corner-Pin	(0, 63)	Adj
L-Corner-Pin	(0, 63)	Adj
Pin Phase	(0, 63)	Adj
V-Slope	(0, 63)	35
V-Size	(0, 63)	Adj
S-Correction	(0, 63)	Adj
V-Centre	(0, 63)	Adj
V-Zoom	(0, 63)	23
Magenta	(0, 63)	40



4-2. TEST MODE 1:

Test Mode 1 is available by pressing the 'TEST' button once, OSD 'T' appears. The functions described below are available by selecting the indicated keys. The 'T' is released automatically after each command is executed.

KEY	T-MODE FUNCTION
volume +	volume maximum
volume -	Picture minimum
picture +	Picture maximum
picture -	Picture minimum
colour up	colour maximum
colour down	colour minimum
brightness - bright	brightness maximum
brightness - dark	brightness minimum
hue - purplish	hue - purplish
hue - greenish	hue - greenish
sharpness - sharp	sharpness maximum
sharpness - soft	sharpness minimum
balance left	balance full left
balance right	balance full right
treble up	treble maximum
treble down	treble minimum
bass up	bass maximum
bass down	bass minimum

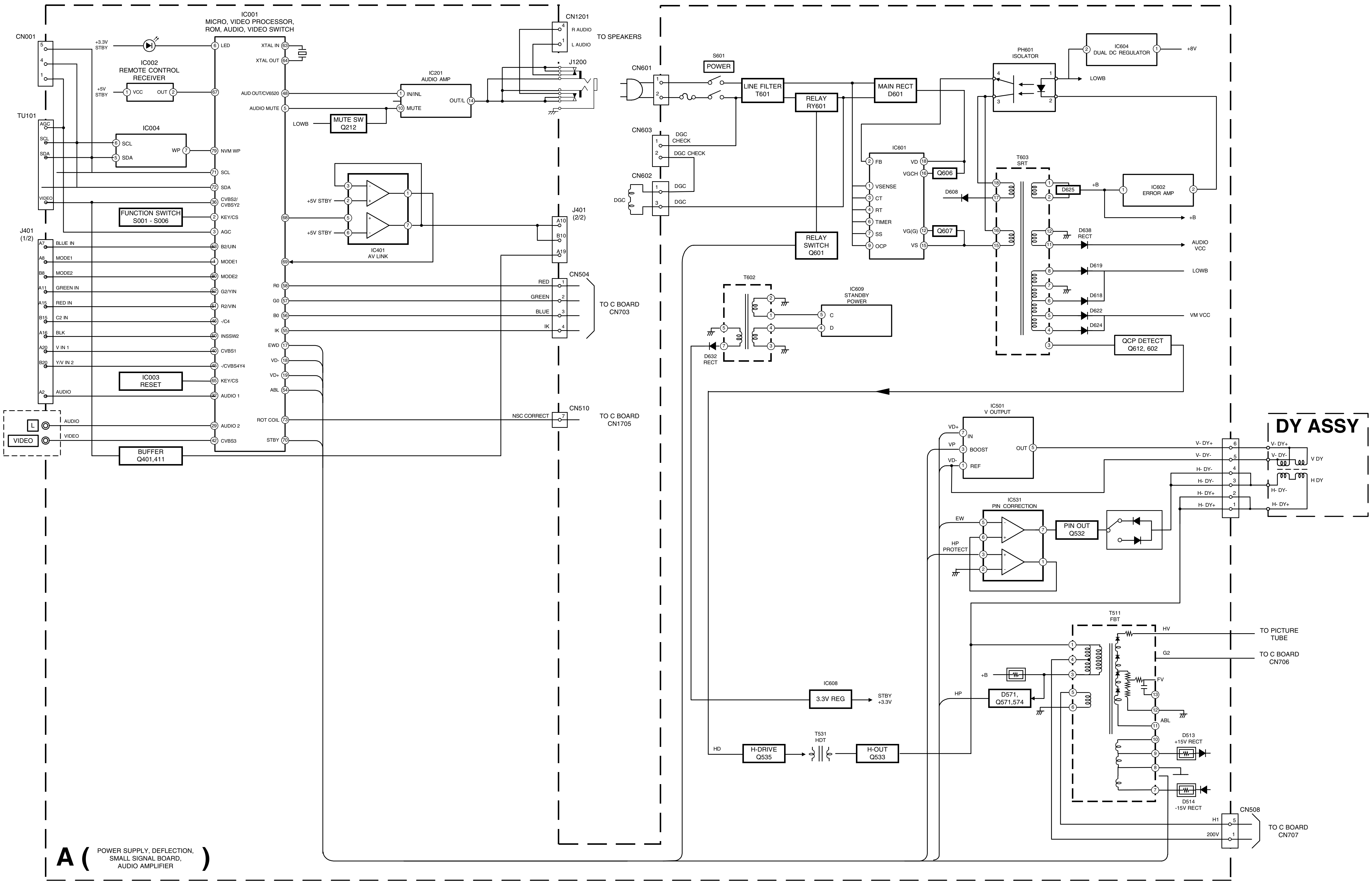
4-3. TEST MODE 2:

Test Mode 2 is available by pressing the 'TEST' button twice, OSD 'TT' appears. The functions described below are available by selecting the two numbers. To release the 'Test mode 2', press 00, 10, 20 ... twice or switch the TV set into Stand-by mode. In 'TT Menu' mode, it is possible to remove the Menu from the screen by pressing the Speaker Off button once. Pressing the Speaker OFF button a second time will cause the Menu to reappear. The function is kept even when the menu is not displayed on screen !!.

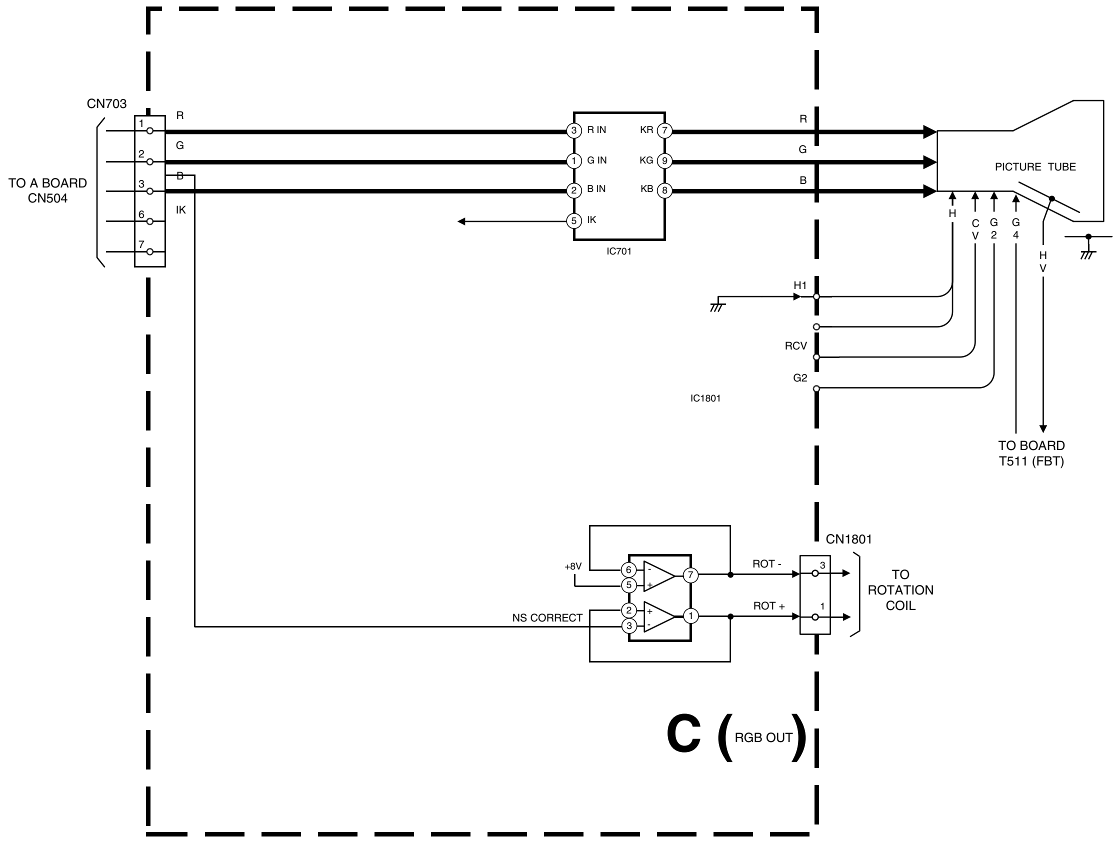
00	'TT' mode off
01	Picture maximum
02	Picture minimum
03	Set speaker/headphone Volume to 35%
04	Set speaker/headphone Volume to 50%
05	Set speaker/headphone Volume to 65%
06	Set speaker/headphone Volume to 80%
07	Ageing mode
08	Shipping Condition
11	Sub picture adjustment
12	Sub colour adjustment
13	Sub Brightness adjustment
14	Text H Position adjustment
15	Rotation Coil Test
16	Picture level 50%
19	Factory Mode Enable/Disable
21	Destination ADEKR
22	Destination BL
23	Destination ADEKR
24	Destination U
25	Destination ADEKR
26	Destination BL
27	Destination ADEKR
28	Destination ADEKR
31	Auto Shutoff Enable/Disable
33	Rotation ON/OFF
35	CRT 4:3 <> 16:9 ; Display TV status
36	Velocity Modulation (VM) OFF/ON test
38	G2 adjustment
41	Re-initialise NVM
43	Select Dual A sound
44	Select Dual B sound
45	Select Mono sound
46	Select Stereo sound
48	Set NVM as non virgin
49	Set NVM as virgin
51	Virtual Dolby on/off
52	Subwoofer / MPB (Bass enhancement) Enable
54	Dot structure C/M (chroma trap)ination ADEKR
55	Tuner selection (SONY/ALPS)
56	BBE enable/disable
57	BBE menu line enable/disable
61	Auto AGC Adjustment
62	AM from baseband enable/disable
63	Enable/Disable YC3 connector
64	Enable/Disable RGB priority
65	RGB auto-detect enable/disable
66	On timer enable/disable
67	Manual AGC Adjustment
68	Enable/Disable X26 countermeasure (N problem)
69	Enable/Disable ACI feature
71	Force PAL video
72	Un-force PAL (restore normal video condition)
73	Enable Zweiton D/K2 system (6.5/6.74)
74	Enable Zweiton D/K3 system (6.5/5.74)
78	Balance full left
79	Balance full right
87	Local keys test
89	Enable/Disable watchdog
91	Set 14:9 zoom mode
92	Set SMART zoom mode
93	Set 16:9 zoom mode
94	Set ZOOM mode
95	Set 4:3 zoom mode
99	Display Error and Working Time menu

Memo

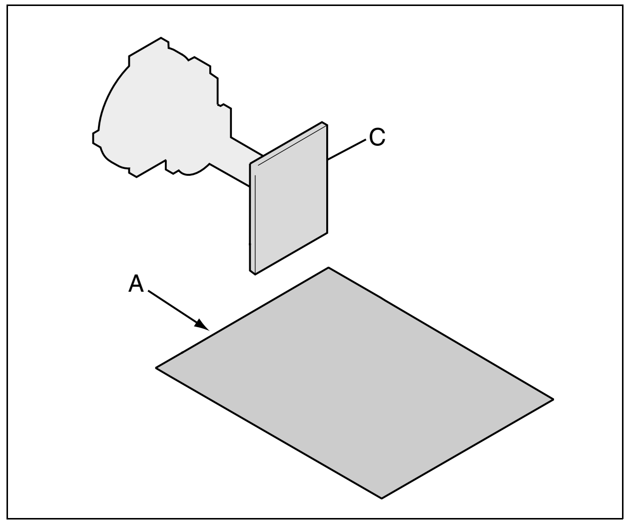
5-1. BLOCK DIAGRAMS (1)



5-1. BLOCK DIAGRAMS (2)



5-2. CIRCUIT BOARD LOCATION



5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note :

- All capacitors are in μF unless otherwise noted.
- pF : μμF 50WV or less are not indicated except for electrolytic types.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch : 5mm Electrical power rating : 1/4W

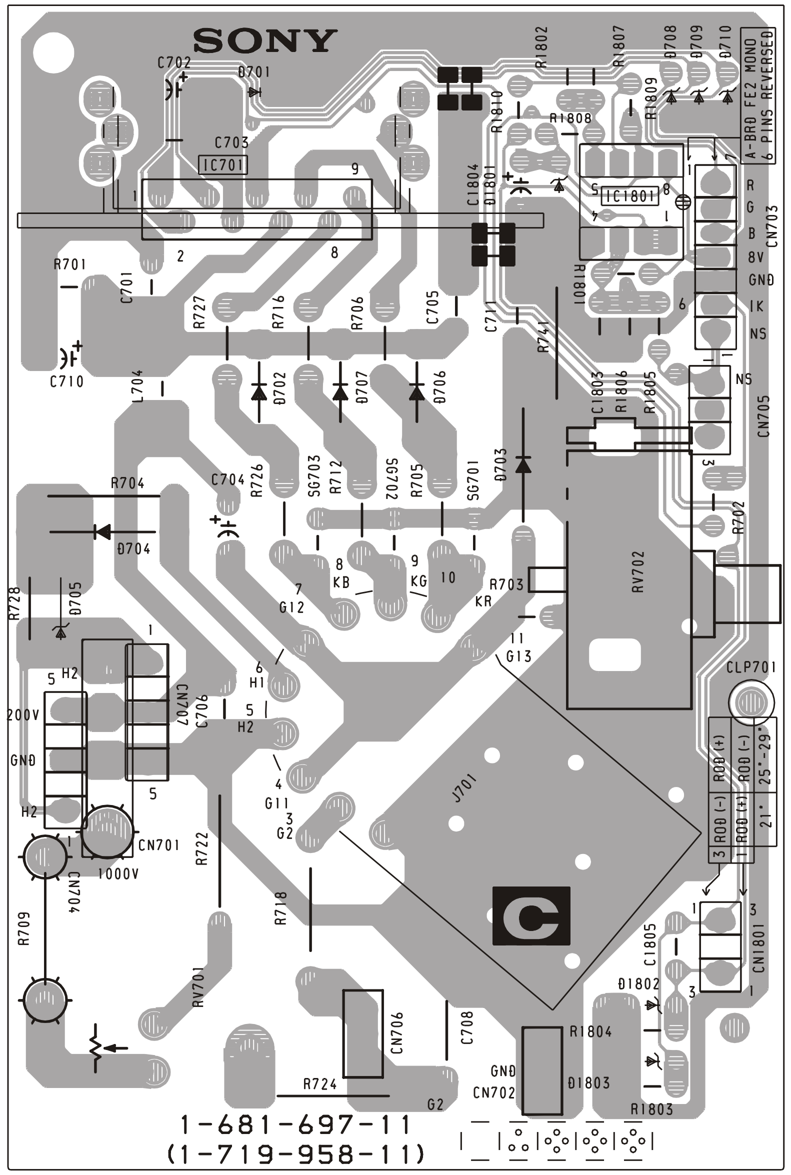
- Chip resistors are 1/10W
- All resistors are in ohms.
  k = 1000 ohms, M = 1000,000 ohms
- : nonflammable resistor.
- : fusible resistor.
- △ : internal component.
- : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- All voltages are in Volts.
- Readings are taken with a 10Mohm digital mutimeter.
- Readings are taken with a color bar input signal.
- Voltage variations may be noted due to normal production tolerences.
- : B + bus.
- : B - bus.
- : RF signal path.
- : earth - ground.
- : earth - chassis.

Reference Information

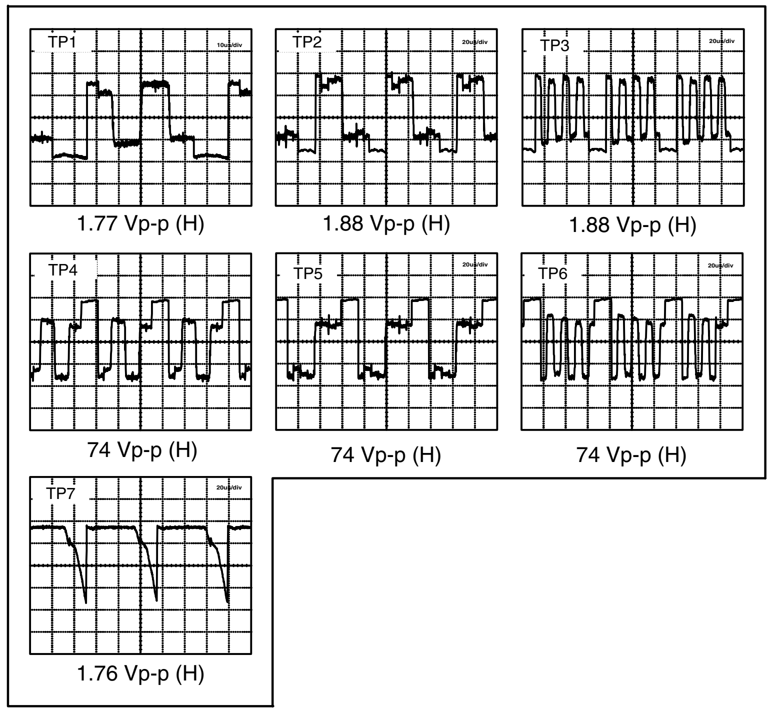
RESISTOR	**RN**	: METAL FILM
	RC	: SOLID
	FPRD	: NON FLAMMABLE CARBON
	FUSE	: NON FLAMMABLE FUSIBLE
	RS	: NON FLAMMABLE METAL OXIDE
	RB	: NON FLAMMABLE CEMENT
	RW	: NON FLAMMABLE WIREWOUND
		: ADJUSTMENT RESISTOR
COIL	**LF-8L**	: MICRO INDUCTOR
CAPACITOR	**TA**	: TANTALUM
	PS	: STYROL
	PP	: POLYPROPYLENE
	PT	: MYLAR
	MPS	: METALIZED POLYESTER
	MPP	: METALIZED POLYPROPYLENE
	ALB	: BIPOLAR
	ALT	: HIGH TEMPERATURE
	ALR	: HIGH RIPPLE

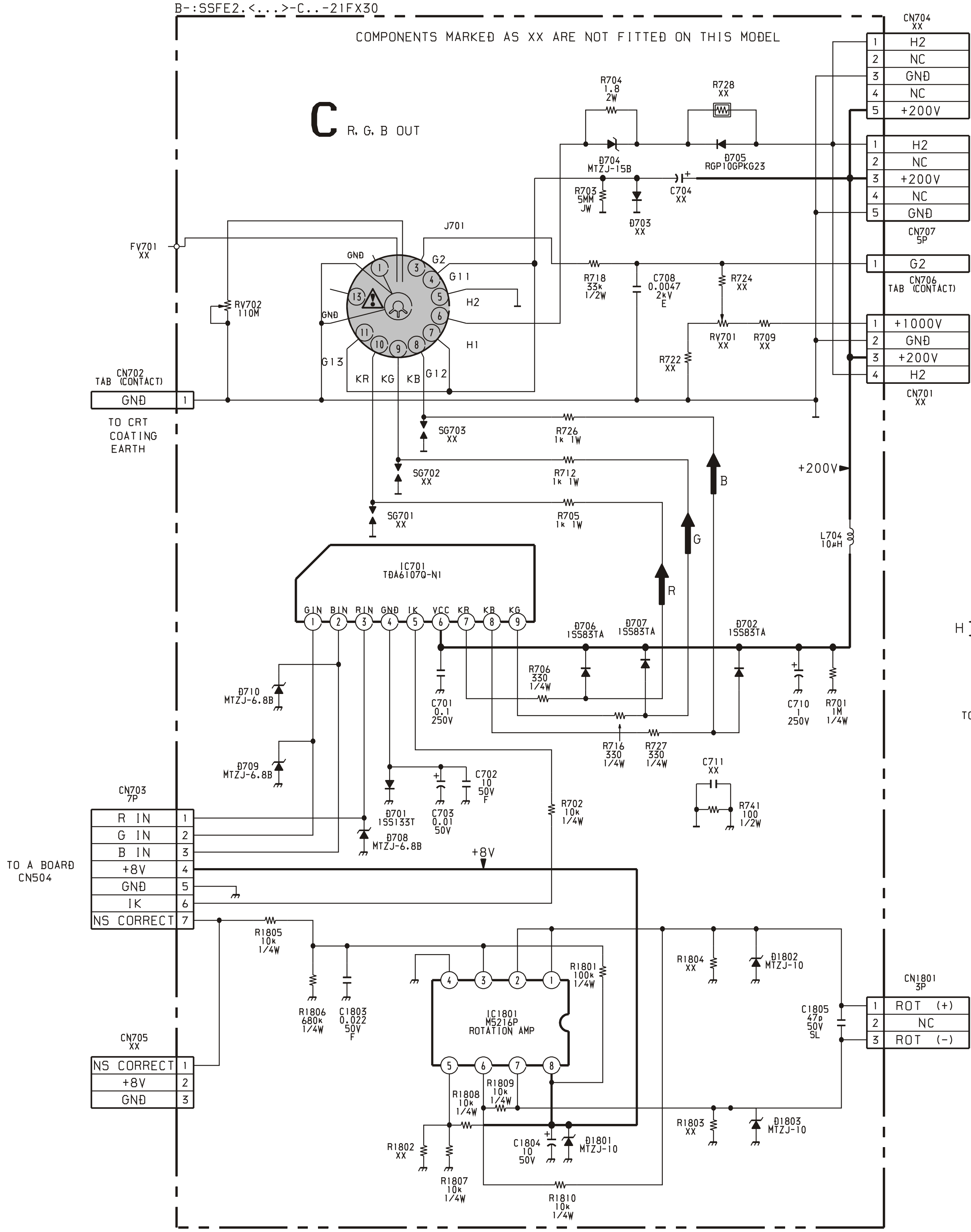
Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

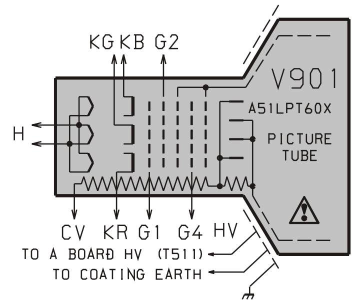
Note : Les composants identifiés par une trame et par une marque ⚠ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié. specified.



C Board Waveforms







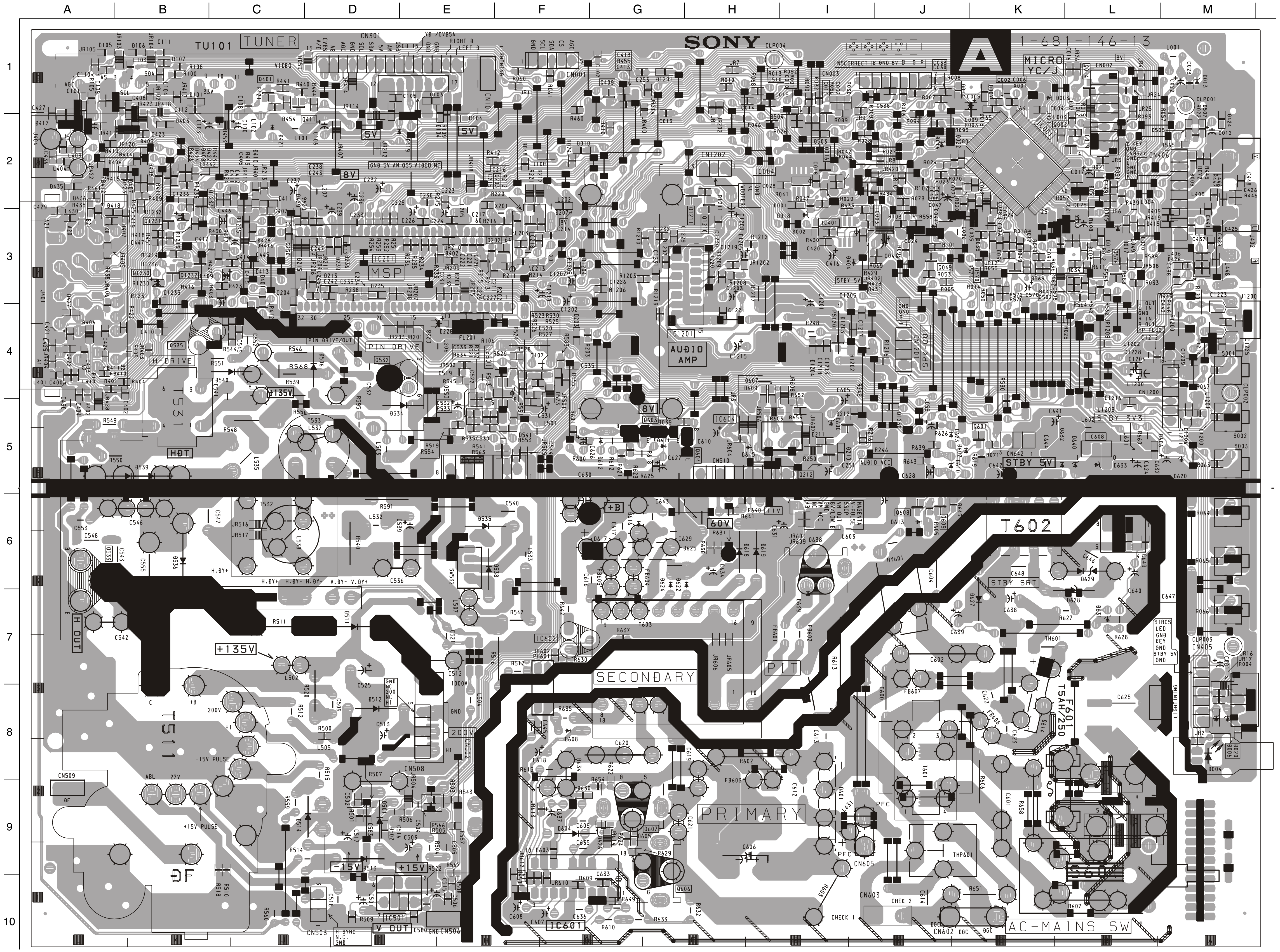
Semiconductor Voltage Table

Ref	(e)	(b)	(c)	Ref	(e)	(b)	(c)	Ref	(e)	(b)	(c)
Q701	124.2	124.8	202	Q706	7.5	8.1	125.0	Q712	125.8	126.4	201.9
Q702	2.3	3.0	7.5	Q707	124.6	125.8	5.5	Q713	133.0	132.4	201.9
Q703	7.5	8.1	131.6	Q708	3.5	2.1	7.5	Q715	132.3	131.5	8.1
Q704	131	132.4	5.2	Q709	7.5	8.1	123.3	Q716	125.8	125.0	8.1
Q705	2.5	3.1	7.5	Q710	123.0	124.3	5.5	Q717	124.2	123.4	8.1

IC Voltage Table

Ref No	Pin No	Voltage (V)
IC1801	1	1.3
	2	1.3
	3	1.4
	5	4.1
	6	4.1
	7	7.0
	8	8.0

C [RGB OUT]



IC Voltage Table

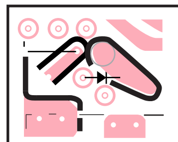
Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)
IC001	1	0	IC001	67	4.8
	2	3.2		68	0.4
	3	2.9		69	0
	5	0		70	0
	6	2.0		71	0
	8	2.3		72	0
	9	8.0		73	7.1
	10	5.0		74	5.0
	12	0		75	8.1
	13	0		76	-3.5
	14	4.0		77	0
	16	1.4		78	3.2
	17	1.5		79	3.2
	18	0		80	0
	19	0	IC501	1	0.3
	20	3.8		3	-12.6
	21	3.8		5	0.2
	22	5.0		6	13.9
	26	0		7	0.3
	28	3.5	IC531	1	1.4
	29	3.6		2	2.3
	30	1.9		3	1.8
	31	0.3		5	2.4
	32	3.6		6	1.6
	34	1.9		7	6.4
	35	1.4	IC601	1	-80.4
	36	3.9		2	-80.5
	38	1.8		3	-80.2
	40	3.3		4	-80.2
	42	3.3		5	-81.5
	43	1.4		6	-81.6
	45	0		7	-77.8
	46	0		9	-81.8
	47	3.6		10	-76
	48	2.8		11	-81.9
	49	2.3		12	-79.4
	50	0.2		14	16.5
	51	2.5		15	11
	52	2.5		16	14.4
	53	2.5		18	86.4
	54	2.1	IC1201	1	11
	55	5.2		3	4.9
	56	3.0		5	0
	57	3.1		6	0
	58	3.1		7	11.3
	59	3.2		9	0.3
	62	0		10	0
	63	0		12	0
	64	0		14	11.35
	65	0			

Semiconductor Voltage Table

Ref	(e)	(b)	(c)	Ref	(e)	(b)	(c)
Q013	0	0.7	0	Q604	0	0	2.5
Q016	0	0	3.3	Q608	0	0	5.6
Q212	0	0.7	0	Q609	5.6	5.6	0
Q401	4.8	4.2	1.8				
Q411	1.1	1.7	4.2	**Ref**	**(s)**	**(g)**	**(d)**
Q601	5.6	4.8	5.3	Q606	10.9	14.5	86.7
Q602	14.2	5.1	8	Q607	-82.4	-79.9	10.9
Q603	8	8	0	Q535	0	2.5	95.2

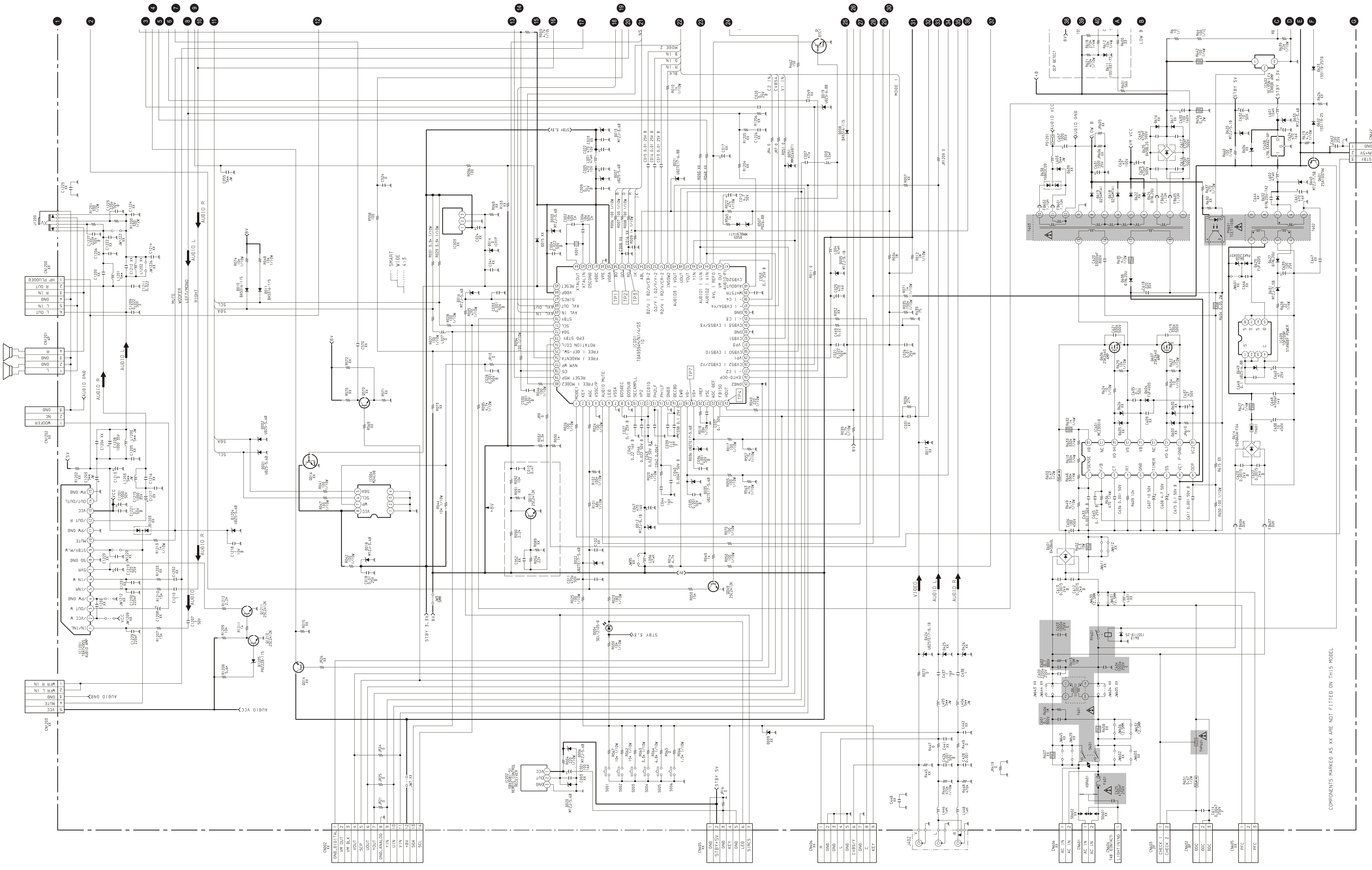
Semiconductor Location Table

DIODE		D419	E - 2	D022	J - 2	D207	F - 3	D405	B - 2	D419	E - 2	D436	A - 2	D514	C - 9	D602	J - 5	D619	H - 6	D632	K - 5	Q013	I - 3	Q533	A - 6	Q1210	H - 3	IC201	D - 3
D001	I - 2	D011	F - 2	D035	K - 3	D210	I - 5	D406	B - 2	D420	B - 2	D501	D - 9	D534	E - 5	D604	F - 9	D620	M - 5	D633	L - 5	Q014	L - 1	Q535	B - 4	Q1211	H - 3	IC401	I - 3
D002	I - 3	D012	J - 3	D036	K - 3	D211	I - 5	D407	B - 2	D421	C - 2	D502	D - 9	D535	E - 6	D608	F - 8	D621	J - 5	D638	I - 6	Q049	J - 3	Q601	K - 5	Q1230	B - 3	IC501	E - 10
D003	K - 2	D013	M - 1	D051	L - 3	D212	I - 5	D408	B - 2	D422	C - 2	D503	I - 2	D536	B - 6	D610	J - 5	D623	J - 5	D640	L - 5	Q202	E - 3	Q602	G - 5	Q1231	B - 3	IC531	F - 4
D004	M - 4	D014	J - 1	D101	B - 1	D228	E - 4	D410	C - 2	D423	C - 2	D504	I - 2	D537	C - 4	D611	G - 5	D624	G - 6	D649	L - 6	Q203	F - 2	Q603	G - 5	Q1232	B - 3	IC601	F - 10
D005	L - 3	D016	J - 2	D103	E - 1	D236	D - 3	D411	C - 3	D424	M - 2	D505	M - 2	D538	E - 6	D612	G - 5	D625	H - 6	D1204	I - 4	Q212	I - 5	Q604	H - 5	Q1233	C - 2	IC602	F - 7
D022	J - 2	D018	I - 3	D104	E - 2	D239	D - 3	D412	D - 3	D427	A - 4	D506	D - 4	D539	B - 5	D613	J - 6	D627	K - 7	D1205	I - 4	Q401	C - 1	Q606	G - 10	**IC'S**		IC604	H - 5
D207	F - 3	D019	L - 3	D105	A - 1	D402	E - 3	D413	C - 3	D428	C - 3	D507	M - 2	D541	F - 5	D614	K - 8	D628	L - 7	D1230	D - 5	Q409	G - 1	Q607	G - 9	IC001	K - 2	IC608	L - 5
D405	B - 2	D020	M - 8	D106	B - 1	D403	B - 2	D414	B - 2	D429	D - 3	D512	D - 8	D573	F - 5	D615	H - 5	D629	L - 7	**TRANSISTOR**		Q411	D - 2	Q608	J - 6	IC002	M - 8	IC609	L - 6
D406	L - 3	D021	L - 2	D107	B - 2	D404	I - 3	D418	B - 3	D435	A - 2	D513	D - 9	D601	I - 9	D618	H - 6	D631	L - 7	Q002	K - 2	Q532	D - 4	Q609	J - 6	IC004	H - 2	IC1201	H - 4

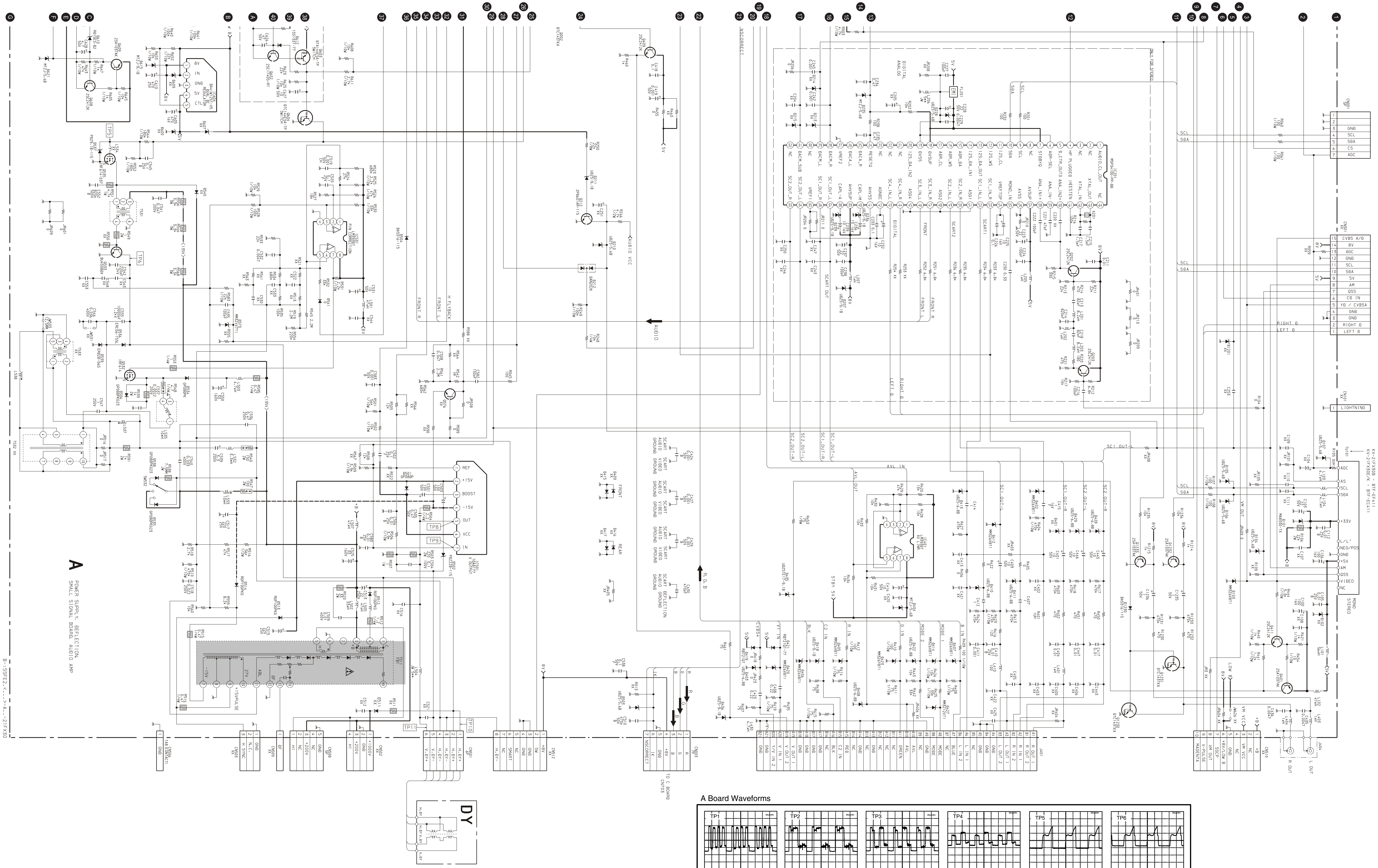


NOTE:
Portions of the circuit marked as shown are high voltage areas. Use care to prevent electric shock during inspection or repair.

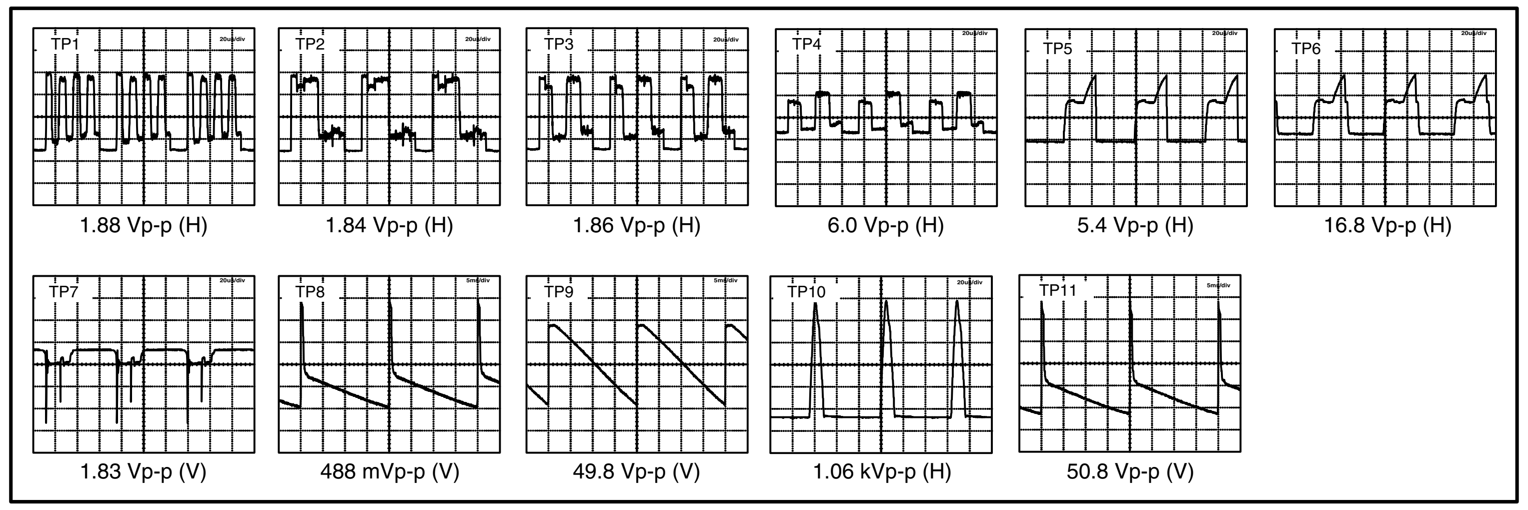
A [PRINTED WIRING BOARD]



A [POWER SUPPLY, DEFLECTION, AUDIO AMPLIFIER (Page 1/2)]



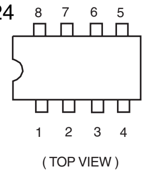
A Board Waveforms



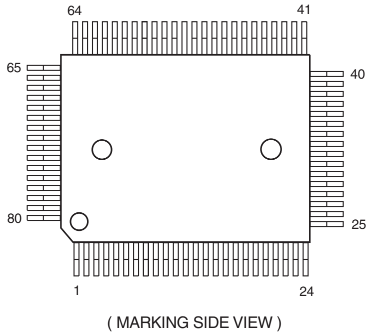
A **[POWER SUPPLY, DEFLECTION, AUDIO AMPLIFIER (Page 2/2)]**

5-4. SEMICONDUCTORS

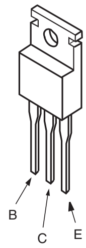
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LM393DT
LM393N
M5216P
TDA2822M
TEA2124



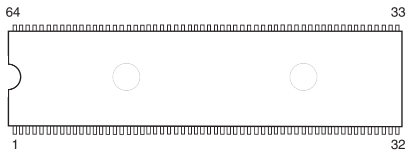
TDA9394H



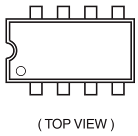
IRF614-005
IRF614-037
IRF620



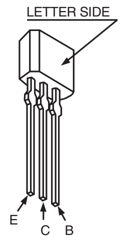
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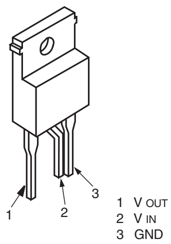
TOP209P



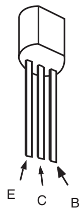
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2SAG33ASQT
2SA933AS-RT
2SC1740S-RT



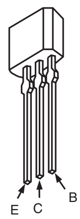
SE-135N
SE135N-LF4



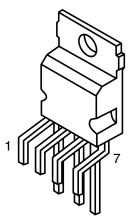
BF421-AMMO
2SA1091-O



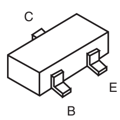
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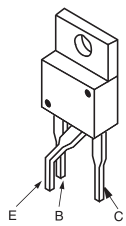
STV9379



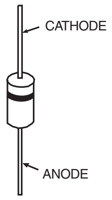
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DTA144ESA-TP
DTC114EKA-T146
DTC143TKA-T146
DTC144EKA-T-146R
2SA1037K-T-146-R
R2SA1162-G
2SA1037AK-T-146-QR
2SD601A-QTX
2SC1623-L5-L6
2SC2412K-QR
2SC2412K-T-146-QR
2SC2412K-T-146-R



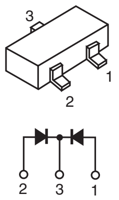
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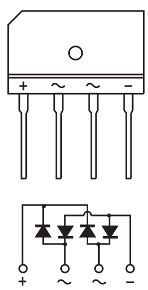
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AU-01Z-V1
BYD33G
BYD33G-AMMO
DINL20-TA
DINL20-U-TA2
DINL40-U-TR2
ERB44-06TP1
EGP20G
EG-1Z-V1
EL1Z
ERD28-06S
ERD28-06S
ERC06-15SL
FMN-G12S
GP08DPKG23
RGP10GPKG23
RG15GPKG23
RG1CLF-B1
RU-3AM
RU3YX-LF-C4
RU3YX-V1
RU-4AM-T3
1SS292T-77



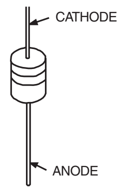
DAN202K
DAN202K-T146
MA8330-TX



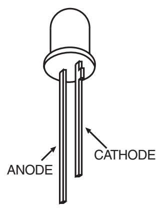
D4SB60L-F



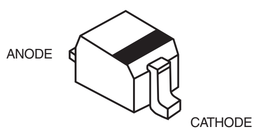
ERA81-004TP1
ERA83-006
MTZJ-3.6A
MTZJ-T-77-2.2A
HZS9.INBZ
MTZJ-T-77-3.6B
MTZJ-T-77-4.7B
MTZJ-T-77-5.1B
MTZJ-T-77-5.6B
MTZJ-T-77-6.8A
MTZJ-T-77-8.2B
MTZJ-T-77-7.5B
MTZJ-T-77-9.1
MTZJ-T-77-9.1B
MTZJ-T-77-10
MTZJ-T-72-10A
MTZJ-T-72-10B
MTZJ-T-77-15B
MTZJ-T-77-33A
MTZJ-33C
MTZJ-7.5B
P6KE200ASY
RD3.9ES-B2
RD7.5ESB2
RD9.1ES-B3
RD10ESB2
RD15ES-T1B2
1SS119-25TD
1SS133T-77



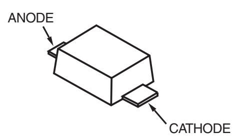
SLA-570KT3F



1SS355TE-17
RD12SB2
UDZS-TE-17-4.7B
UDZS-TE-17-5.6B
UDZS-TE-17-6.8B
UDZS-TE-17-9.1B
UDZ-TE-17-22B

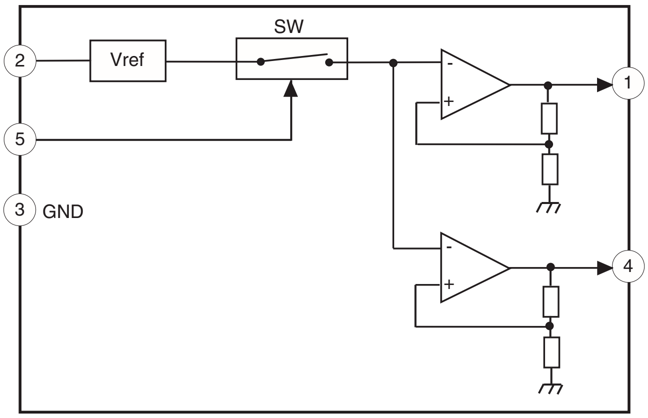


UF4005PKG23

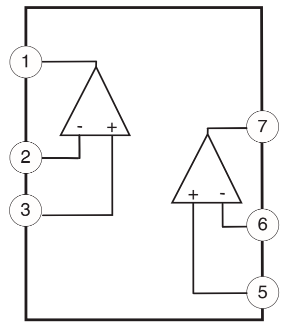


5-5 IC BLOCK DIAGRAMS

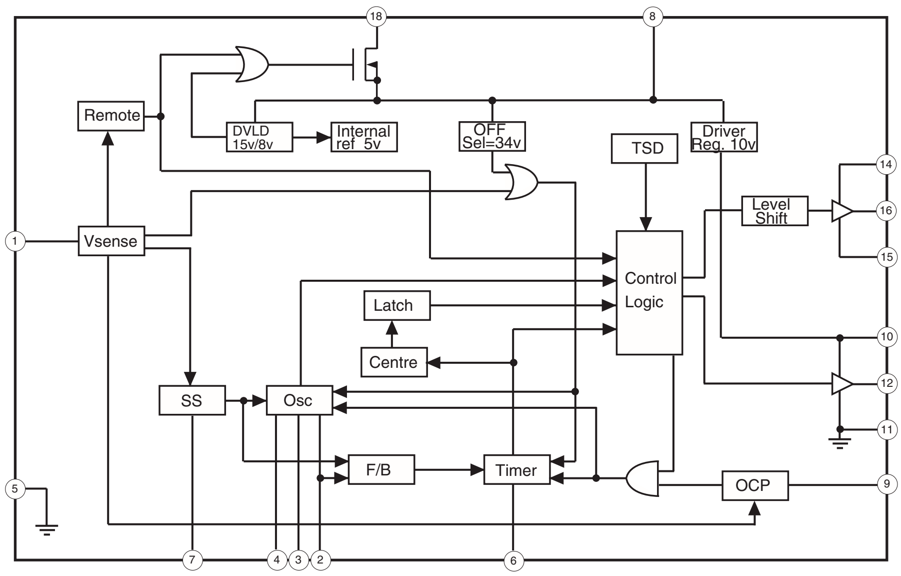
A BOARD IC604 BA41W12ST-V5



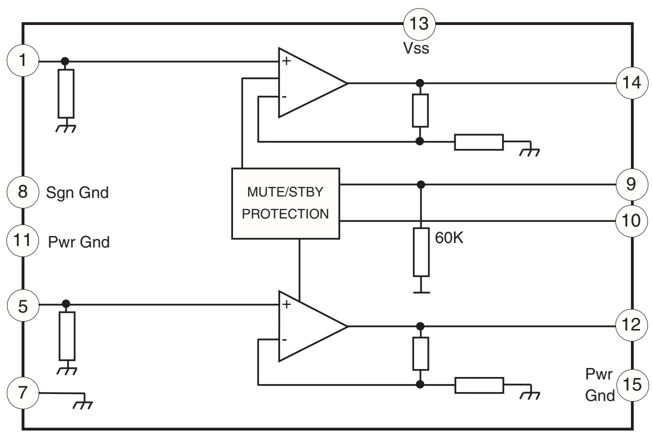
A BOARD IC401/IC531 LM393DT



A BOARD IC601 MCZ3001D



A BOARD IC1201 TDA7497



SECTION 6
EXPLODED VIEWS

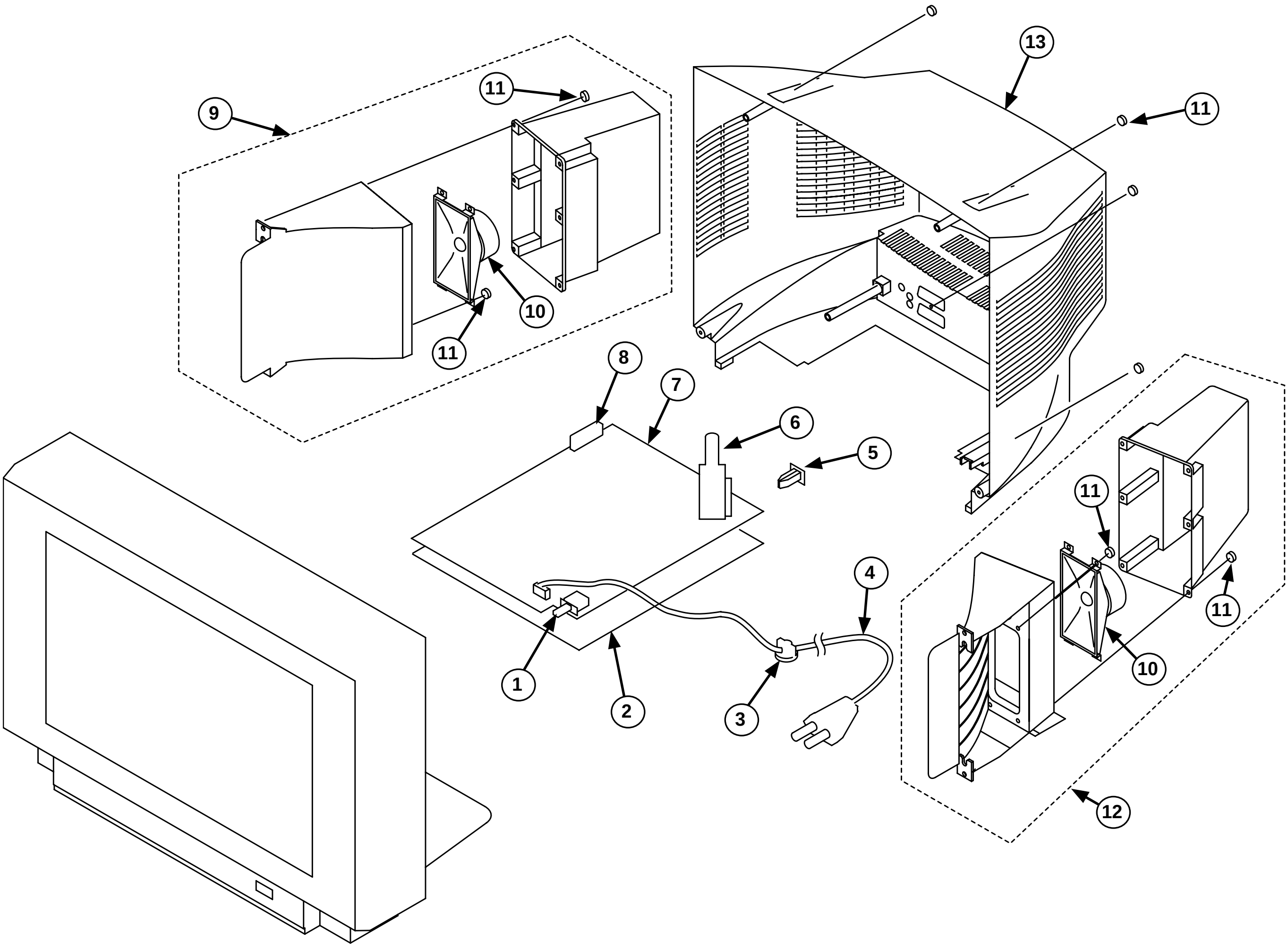
Note : Les composants indentifies par une trame et par une marque ⚠ sonte d'une importance critique pour la securite. Ne les remplacer que par des pieces du numero specifie.

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

NOTE :

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

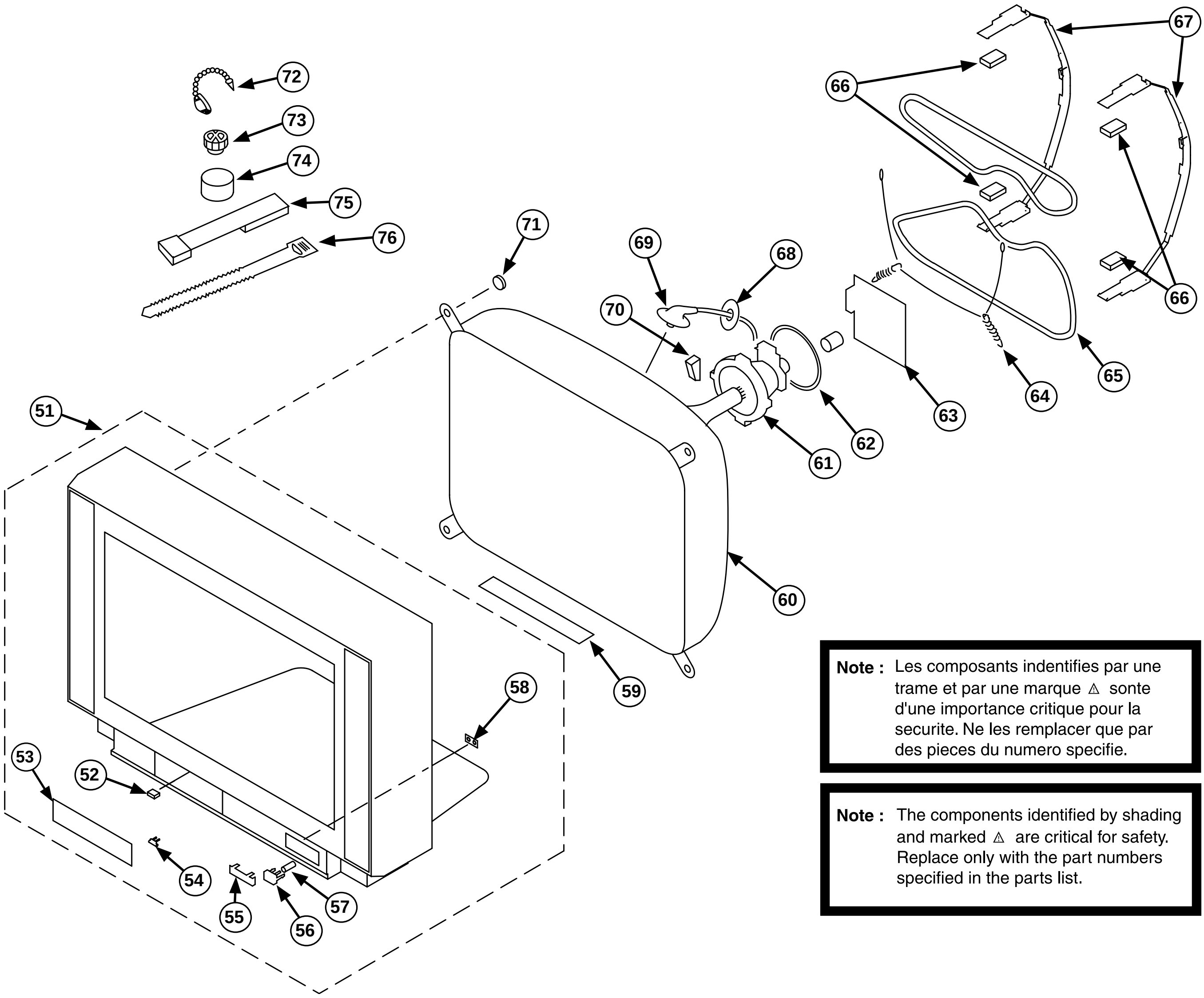
6-1. CHASSIS



REF.NO.		PART.NO	DESCRIPTION	REMARK
1	⚠	1-571-433-31	SWITCH, PUSH (AC POWER)	
2		*4-204-143-04	BRACKET, MAIN	
3		*4-202-531-01	AC CORD LOCK (SC)	
4	⚠	1-765-286-11	CORD POWER	
5		*4-204-517-05	SUPPORT, FBT	
6	⚠	1-453-314-31	TRANSFORMER ASSY, FLYBACK	
7		*A-1632-936-A	A BOARD, COMPLETE (KV-21FX30B)	
		*A-1632-930-A	A BOARD, COMPLETE (KV-21FX30E/21FX30K)	

REF.NO.	PART.NO	DESCRIPTION	REMARK
8	8-598-535-10	FRONTEND (BTF-EF411) (KV-21FX30B)	
	8-598-533-00	FRONTEND (BTF-EC411) (KV-21FX30E/21FX30K)	
9	A-1678-206-A	SPEAKER BOX ASSY LEFT	10,11
10	1-505-924-11	SPEAKER (15X6.5CM)	
11	4-039-358-01	SCREW, (4x16) (+) BV TAPPING	
12	A-1678-207-A	SPEAKER BOX ASSY RIGHT	10,11
13	4-204-711-11	COVER, REAR	

6-2. PICTURE TUBE



Note : Les composants indentifies par une trame et par une marque ⚠ sonte d'une importance critique pour la securite. Ne les remplacer que par des pieces du numero specifie.

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

REF.NO.		PART.NO	DESCRIPTION	REMARK
51		X-4200-723-1	BEZNET ASSY	52-58
52		4-047-464-01	CATCHER, PUSH	
53		4-204-901-21	DOOR, (PAINTED)	
54		3-703-035-12	SHAFT LID	
55		4-204-902-11	WINDOW, ORNAMENTAL (PRINTED)	
56		4-204-903-11	BUTTON, POWER (PAINTED)	
57		4-204-426-01	SPRING	
58		4-204-706-01	GUIDE, LIGHT	
59		4-204-666-01	SHEET, BLOTTING	
60	⚠	8-738-836-05	PICTURE TUBE (A51LPT60X)	
61		8-451-505-41	DEFLECTION YOKE (Y21RSA-L)	
62		1-452-728-61	COIL, NA ROTATION (RT-154)	
63		*A-1639-020-A	C BOARD, COMPLETE	
64		4-369-318-22	SPRING, TENSION	
65	⚠	1-419-772-11	COIL, DEGAUSSING	
66		*4-205-248-01	CUSHION DGC	
67		4-204-900-01	BAND, DGC	
68		*4-203-022-01	HOLDER, HV	
69	⚠	1-251-839-21	CAP ASSY, HIGH VOLTAGE	
70		4-203-658-01	SPACER, DY	
71		4-203-648-01	SCREW (5), SELF-TAPPING	
72		4-308-870-00	CLIP, LEAD WIRE	
73		1-452-094-11	MAGNET, ROTATABLE DISK; 15MM Ø	
74		1-452-032-11	MAGNET, DISK; 10MM Ø	
75		X-4387-214-1	PERMALLOY ASSY, CORRECTION	
76		3-701-007-00	BAND, BINDING	

SECTION 7
ELECTRICAL PARTS LIST

PARTS LISTING TABLE OF CONTENTS

Note : Refer to the designated variant parts list when seeking a part indicated by an asterisk (*)
Parts indicated (XX) on the Schematic Diagram are not used in this model and therefore do not appear in the Parts List.

***A-1632-936-A A Board, Complete (KV-21FX30B)**
***A-1632-930-A A Board, Complete (KV-21FX30E/ KV-21FX30K)**

A Board, Common Parts

REF.NO.	PART.NO	DESCRIPTION			REMARK
	4-203-258-02	HOLDER, LED			
	*4-374-846-01	COVER, CAPACITOR, CAP TYPE			
	4-382-854-01	SCREW (M3X8), P, SW (+)			
	4-382-854-01	SCREW (M3X8), P, SW (+)			
		< CAPACITOR >			
C001	1-126-933-91	ELECT	100UF	20.00%	16V
C002	1-163-233-91	CERAMIC CHIP	18PF	5.00%	50V
C004	1-163-037-91	CERAMIC CHIP	0.022UF	10.00%	50V
C005	1-126-935-91	ELECT	470UF	20.00%	10V
C006	1-163-233-91	CERAMIC CHIP	18PF	5.00%	50V
C007	1-162-949-91	CERAMIC CHIP	47PF	5.00%	50V
C009	1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C010	1-164-005-91	CERAMIC CHIP	0.47UF		16V
C011	1-163-005-91	CERAMIC CHIP	470PF	10.00%	50V
C012	1-126-963-91	ELECT	4.7UF	20.00%	50V
C013	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C014	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C015	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C018	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C020	1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C021	1-163-037-91	CERAMIC CHIP	0.022UF	10.00%	50V
C022	1-126-935-91	ELECT	470UF	20.00%	10V
C025	1-126-935-91	ELECT	470UF	20.00%	16V
C026	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C027	1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C028	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C030	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C033	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C035	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C036	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C037	1-136-244-11	FILM	0.1UF	2.00%	50V
C038	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C039	1-164-505-91	CERAMIC CHIP	2.2UF		16V
C040	1-163-017-91	CERAMIC CHIP	0.0047UF	10.00%	50V
C042	1-163-017-91	CERAMIC CHIP	0.0047UF	10.00%	50V
C043	1-163-037-91	CERAMIC CHIP	0.022UF	10.00%	50V
C044	1-164-346-91	CERAMIC CHIP	1UF		16V
C045	1-164-489-91	CERAMIC CHIP	0.22UF	10.00%	16V
C046	1-163-037-91	CERAMIC CHIP	0.022UF	10.00%	50V
C047	1-126-935-91	ELECT	470UF	20.00%	16V
C053	1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C055	1-535-143-61	LEAD,JUMPER (5.0MM)			
C100	1-126-933-91	ELECT	100UF	20.00%	16V
C103	1-126-965-91	ELECT	22UF	20.00%	50V

REF.NO.	PART.NO	DESCRIPTION			REMARK
C105	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C106	1-126-933-91	ELECT	100UF	20.00%	16V
C112	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C211	1-162-970-91	CERAMIC CHIP	0.01UF	10.00%	25V
C213	1-163-249-91	CERAMIC CHIP	82PF	5.00%	50V
C214	1-163-139-91	CERAMIC CHIP	820PF	5.00%	50V
C215	1-163-084-91	CERAMIC CHIP	1.5PF	0.25PF	50V
C216	1-163-117-91	CERAMIC CHIP	100PF	5.00%	50V
C217	1-163-084-91	CERAMIC CHIP	1.5PF	0.25PF	50V
C218	1-163-249-91	CERAMIC CHIP	82PF	5.00%	50V
C221	1-163-109-91	CERAMIC CHIP	47PF	5.00%	50V
C222	1-163-117-91	CERAMIC CHIP	100PF	5.00%	50V
C223	1-126-965-91	ELECT	22UF	20.00%	50V
C224	1-163-117-91	CERAMIC CHIP	100PF	5.00%	50V
C225	1-126-157-91	ELECT	10UF	20.00%	16V
C226	1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C227	1-163-117-91	CERAMIC CHIP	100PF	5.00%	50V
C228	1-126-965-91	ELECT	22UF	20.00%	50V
C229	1-163-017-91	CERAMIC CHIP	0.0047UF	10.00%	50V
C230	1-164-336-91	CERAMIC CHIP	0.33UF		25V
C232	1-126-157-91	ELECT	10UF	20.00%	16V
C233	1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C234	1-107-823-91	CERAMIC CHIP	0.47UF	10.00%	16V
C235	1-164-005-91	CERAMIC CHIP	0.47UF		25V
C236	1-126-157-91	ELECT	10UF	20.00%	16V
C237	1-126-965-91	ELECT	22UF	20.00%	50V
C238	1-163-117-91	CERAMIC CHIP	100PF	5.00%	50V
C239	1-126-157-91	ELECT	10UF	20.00%	16V
C242	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C245	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C401	1-126-964-91	ELECT	10UF	20.00%	50V
C404	1-162-970-91	CERAMIC CHIP	0.01UF	10.00%	25V
C407	1-164-346-91	CERAMIC CHIP	1UF		16V
C408	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C409	1-126-964-91	ELECT	10UF	20.00%	50V
C410	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C411	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C412	1-164-346-91	CERAMIC CHIP	1UF		16V
C414	1-164-346-91	CERAMIC CHIP	1UF		16V
C415	1-164-346-91	CERAMIC CHIP	1UF		16V
C416	1-126-964-91	ELECT	10UF	20.00%	50V
C417	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C418	1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C419	1-162-964-91	CERAMIC CHIP	0.001UF	10.00%	50V
C423	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C424	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C426	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C427	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C428	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C429	1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V

A

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

REF.NO.		PART.NO	DESCRIPTION		REMARK	
C430		1-102-114-91	CERAMIC	470PF	10.00%	50V
C435		1-163-017-91	CERAMIC CHIP	0.0047UF	10.00%	50V
C436		1-163-017-91	CERAMIC CHIP	0.0047UF	10.00%	50V
C437		1-164-346-91	CERAMIC CHIP	1UF		16V
C438		1-164-346-91	CERAMIC CHIP	1UF		16V
C445		1-126-964-91	ELECT	10UF	20.00%	50V
C446		1-126-964-91	ELECT	10UF	20.00%	50V
C447		1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C449		1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C501		1-126-968-91	ELECT	100UF	20.00%	50V
C502		1-163-038-91	CERAMIC CHIP	0.1UF		25V
C503		1-126-968-91	ELECT	100UF	20.00%	50V
C504		1-106-220-91	MYLAR	0.1UF	10.00%	100V
C505		1-137-194-81	FILM	0.47UF	5.00%	50V
C506		1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C508		1-163-035-91	CERAMIC CHIP	0.047UF		50V
C509		1-107-364-81	MYLAR	0.01UF	10.00%	400V
C510		1-163-005-91	CERAMIC CHIP	470PF	10.00%	50V
C513		1-107-662-91	ELECT	22UF	20.00%	250V
C515		1-104-666-91	ELECT	220UF	20.00%	25V
C517		1-104-666-91	ELECT	220UF	20.00%	25V
C518		1-106-375-81	MYLAR	0.022UF	10.00%	250V
C519		1-163-275-91	CERAMIC CHIP	0.001UF	5.00%	50V
C520		1-163-038-91	CERAMIC CHIP	0.1UF		25V
C524		1-216-295-91	SHORT	0		
C525		1-123-024-51	ELECT	33UF		160V
C531		1-126-964-91	ELECT	10UF	20.00%	50V
C532		1-163-017-91	CERAMIC CHIP	0.0047UF	10.00%	50V
C535		1-163-251-91	CERAMIC CHIP	100PF	5.00%	50V
C536		1-137-713-11	FILM	0.47UF	5%	250V
C537		1-106-351-91	MYLAR	0.0022UF	99%	200V
C538		1-165-319-91	CERAMIC CHIP	0.1UF		50V
C539		1-107-642-91	ELECT	3.3UF	20.00%	200V
C540		1-137-051-91	FILM	0.033UF	10.00%	400V
C541		1-106-383-91	MYLAR	0.047UF	10.00%	200V
C542		1-162-131-91	CERAMIC	220PF	10.00%	2KV
C545		1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C546		1-135-840-51	FILM	0.036UF	3%	400V
C547		1-115-522-21	FILM	1UF	5.00%	250V
C550		1-107-638-91	ELECT	33UF	20.00%	160V
C552		1-102-212-91	CERAMIC	820PF	10.00%	500V
C555		1-117-644-31	FILM	10000PF	3.00%	1.2KV
C580		1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C582		1-163-255-91	CERAMIC CHIP	150PF	5.00%	50V
C583		1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C600		1-119-888-51	CERAMIC	2200PF	20.00%	250V
C601	⚠	1-136-516-12	FILM	0.1UF	20.00%	300V
C602	⚠	1-136-516-12	FILM	0.1UF	20.00%	300V
C603	⚠	1-119-899-51	CERAMIC	1000PF	20.00%	250V
C604	⚠	1-119-899-51	CERAMIC	1000PF	20.00%	250V
C605		1-111-036-91	ELECT	470UF	20.00%	16V
C606		1-125-991-11	ELECT	180UF	20%	450V
C607		1-126-964-91	ELECT	10UF	20.00%	50V
C608		1-126-963-91	ELECT	4.7UF	20.00%	50V
C610		1-126-941-91	ELECT	470UF	20.00%	25V
C611		1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C612		1-104-571-91	CERAMIC	0.0015UF	10.00%	2KV
C613		1-104-571-91	CERAMIC	0.0015UF	10.00%	2KV
C614		1-161-964-51	CERAMIC	0.0047UF		250V
C615		1-115-339-91	CERAMIC CHIP	0.1UF	10.00%	50V
C616		1-165-127-91	CERAMIC	470PF	10.00%	500V
C617		1-165-127-91	CERAMIC	470PF	10.00%	500V
C618		1-126-949-91	ELECT	220UF	20.00%	35V
C619		1-164-644-51	CERAMIC	330PF	10.00%	500V
C620		1-137-990-21	FILM	33000PF	3%	800V
C621		1-164-644-51	CERAMIC	330PF	10.00%	500V
C622		1-104-571-91	CERAMIC	0.0015UF	10.00%	2KV
C623		1-104-571-91	CERAMIC	0.0015UF	10.00%	2KV
C624		1-126-935-91	ELECT	470UF	20.00%	16V
C625	⚠	1-127-798-51	CERAMIC	4700PF	20.00%	250V
C626		1-126-967-91	ELECT	47UF	20.00%	50V
C627		1-126-964-91	ELECT	10UF	20.00%	50V
C628		1-126-963-91	ELECT	4.7UF	20.00%	50V
C629		1-165-127-91	CERAMIC	470PF	10.00%	500V
C630		1-107-648-41	ELECT	100UF	20.00%	160V
C631		1-126-942-91	ELECT	1000UF	20.00%	25V
C632		1-126-964-91	ELECT	10UF	20.00%	50V
C633		1-163-009-91	CERAMIC CHIP	0.001UF	10.00%	50V
C634		1-128-562-91	ELECT	47UF	20.00%	100V
C635		1-136-165-81	FILM	0.1UF	5.00%	50V
C636		1-136-479-41	FILM	0.001UF	2.00%	50V
C637		1-126-967-91	ELECT	47UF	20.00%	50V
C638		1-107-679-91	ELECT	10UF	20.00%	450V
C639		1-104-665-91	ELECT	100UF	20.00%	25V
C640		1-104-664-91	ELECT	47UF	20.00%	25V
C641		1-115-785-91	ELECT	470UF	20.00%	16V
C642		1-104-665-91	ELECT	100UF	20.00%	25V
C643		1-165-127-91	CERAMIC	470PF	10.00%	500V
C645		1-164-004-91	CERAMIC CHIP	0.1UF	10.00%	25V
C648		1-125-782-91	CERAMIC	4700PF	10.00%	1KV
C649		1-163-038-91	CERAMIC CHIP	0.1UF		25V
C657		1-126-952-91	ELECT	1000UF	20.00%	35V
C1201		1-126-972-51	ELECT	1000UF	20.00%	50V
C1203		1-535-143-61	LEAD,JUMPER	(5.0MM)		
C1207		1-126-960-91	ELECT	1UF	20.00%	50V
C1209		1-163-033-91	CERAMIC CHIP	0.022UF		50V
C1210		1-126-960-91	ELECT	1UF	20.00%	50V
C1211		1-163-033-91	CERAMIC CHIP	0.022UF		50V
C1213		1-216-295-91	SHORT	0		
C1215		1-126-952-91	ELECT	1000UF	20.00%	35V

REF.NO.	PART.NO	DESCRIPTION	REMARK
C1218	1-109-982-91	CERAMIC CHIP 1UF	10.00% 10V
C1219	1-104-666-91	ELECT 220UF	20.00% 25V
C1221	1-115-339-91	CERAMIC CHIP 0.1UF	10.00% 50V
C1223	1-163-001-91	CERAMIC CHIP 220PF	10.00% 50V
C1227	1-163-001-91	CERAMIC CHIP 220PF	10.00% 50V
C1228	1-126-952-91	ELECT 1000UF	20.00% 35V
C1229	1-163-001-91	CERAMIC CHIP 220PF	10.00% 50V
C1230	1-163-001-91	CERAMIC CHIP 220PF	10.00% 50V
C1235	1-126-960-91	ELECT 1UF	20.00% 50V
C1236	1-126-960-91	ELECT 1UF	20.00% 50V
		< CONNECTOR >	
CN001	*1-564-508-51	PLUG, CONNECTOR 5P	
CN003	*1-564-510-51	PLUG, CONNECTOR 7P	
CN501	1-580-798-32	CONNECTOR PIN (DY)	
CN506	1-695-915-21	TAB (CONTACT)	
CN508	*1-564-508-51	PLUG, CONNECTOR 5P	
CN601	1-580-843-11	PIN, CONNECTOR (POWER)	
CN602	1-508-765-13	PIN, CONNECTOR (5MM PITCH) 3P	
CN603	*1-508-786-13	PIN, CONNECTOR (5MM PITCH) 2P	
CN604	1-695-915-21	TAB (CONTACT)	
CN1201	*1-564-507-51	PLUG, CONNECTOR 4P	
		< DIODE >	
D001	8-719-069-55	DIODE UDZSTE-175.6B	
D002	8-719-069-55	DIODE UDZSTE-175.6B	
D003	8-719-109-69	DIODE RD3.6ES-B2	
D004	8-719-302-47	DIODE SEL1210S-D	
D005	8-719-929-15	DIODE HZS9.1NB2	
D006	8-719-109-89	DIODE RD5.6ESB2	
D007	8-719-069-55	DIODE UDZSTE-175.6B	
D008	8-719-074-43	DIODE BAS316-115	
D010	8-719-074-43	DIODE BAS316-115	
D011	8-719-074-43	DIODE BAS316-115	
D012	8-719-929-15	DIODE HZS9.1NB2	
D013	8-719-109-69	DIODE RD3.6ES-B2	
D014	1-216-295-91	SHORT 0	
D016	8-719-109-89	DIODE RD5.6ESB2	
D018	8-719-109-69	DIODE RD3.6ES-B2	
D019	8-719-978-33	DIODE UDZSTE-176.8B	
D020	8-719-109-89	DIODE RD5.6ESB2	
D021	8-719-978-33	DIODE DTZ-TT11-6.8B	
D022	8-719-069-55	DIODE UDZSTE-175.6B	
D035	8-719-069-55	DIODE UDZSTE-175.6B	
D036	8-719-069-55	DIODE UDZSTE-175.6B	
D051	8-719-081-98	DIODE MM3Z6V8T1	
D101	8-719-977-81	DIODE DTZ33B	
D103	8-719-081-98	DIODE MM3Z6V8T1	
D104	8-719-069-55	DIODE UDZSTE-175.6B	
D105	8-719-069-55	DIODE UDZSTE-175.6B	

REF.NO.	PART.NO	DESCRIPTION	REMARK
D106	8-719-069-55	DIODE UDZSTE-175.6B	
D107	8-719-069-55	DIODE UDZSTE-175.6B	
D207	8-719-069-60	DIODE UDZSTE-179.1B	
D210	8-719-069-55	DIODE UDZSTE-175.6B	
D211	8-719-069-60	DIODE UDZSTE-179.1B	
D212	8-719-914-43	DIODE DAN202K	
D228	8-719-069-55	DIODE UDZSTE-175.6B	
D235	8-719-069-55	DIODE UDZSTE-175.6B	
D236	8-719-069-60	DIODE UDZSTE-179.1B	
D239	8-719-069-60	DIODE UDZSTE-179.1B	
D402	8-719-081-98	DIODE MM3Z6V8T1	
D403	8-719-978-33	DIODE DTZ-TT11-6.8B	
D404	8-719-109-89	DIODE RD5.6ESB2	
D405	8-719-081-98	DIODE MM3Z6V8T1	
D406	8-719-081-98	DIODE MM3Z6V8T1	
D407	8-719-081-98	DIODE MM3Z6V8T1	
D408	8-719-978-33	DIODE DTZ-TT11-6.8B	
D410	8-719-978-33	DIODE DTZ-TT11-6.8B	
D411	8-719-978-33	DIODE DTZ-TT11-6.8B	
D412	8-719-081-98	DIODE MM3Z6V8T1	
D413	8-719-978-33	DIODE DTZ-TT11-6.8B	
D414	8-719-081-98	DIODE MM3Z6V8T1	
D418	8-719-069-60	DIODE UDZSTE-179.1B	
D419	8-719-049-26	DIODE RB721Q	
D420	8-719-081-98	DIODE MM3Z6V8T1	
D421	8-719-049-26	DIODE RB721Q	
D422	8-719-978-33	DIODE DTZ-TT11-6.8B	
D423	8-719-081-98	DIODE MM3Z6V8T1	
D424	8-719-069-60	DIODE UDZSTE-179.1B	
D427	8-719-082-01	DIODE MM3Z12VT1	
D428	8-719-978-33	DIODE DTZ-TT11-6.8B	
D429	8-719-978-33	DIODE DTZ-TT11-6.8B	
D435	8-719-069-60	DIODE UDZSTE-179.1B	
D436	8-719-069-60	DIODE UDZSTE-179.1B	
D501	8-719-908-03	DIODE GP08D	
D502	8-719-081-90	DIODE PDZ22B-115	
D503	8-719-069-55	DIODE UDZSTE-175.6B	
D504	8-719-074-43	DIODE BAS316-115	
D505	8-719-081-97	DIODE MMDL914T1	
D506	8-719-908-03	DIODE GP08D	
D507	8-719-070-59	DIODE PDZ6.8B-115	
D512	8-719-302-43	DIODE EL1Z	
D513	8-719-302-43	DIODE EL1Z	
D514	8-719-302-43	DIODE EL1Z	
D534	8-719-908-03	DIODE GP08D	
D535	8-719-908-03	DIODE GP08D	
D536	8-719-945-80	DIODE ERC06-15S	
D537	8-719-070-62	DIODE PDZ9.1B-115	
D538	8-719-908-03	DIODE GP08D	
D539	8-719-928-08	DIODE ERD28-08S	

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Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

REF.NO.	PART.NO	DESCRIPTION	REMARK
D541	1-216-295-91	SHORT 0	
D573	8-719-082-00	DIODE MM3Z4V7T1	
D601	8-719-510-53	DIODE D4SB60L	
D602	8-719-911-19	DIODE 1SS119-25	
D604	8-719-083-94	DIODE FUF4005	
D608	8-719-063-70	DIODE D1NL20U	
D610	8-719-110-41	DIODE RD15ES-B2	
D611	8-719-991-33	DIODE 1SS133T-77	
D612	8-719-991-33	DIODE 1SS133T-77	
D613	8-719-911-19	DIODE 1SS119-25	
D614	8-719-077-76	DIODE D2SB60A-F04	
D615	8-719-929-15	DIODE HZS9.NB2	
D618	8-719-022-97	DIODE D2S4MTA1	
D619	8-719-022-97	DIODE D2S4MTA1	
D620	8-719-109-85	DIODE RD5.1ESB2	
D621	8-719-109-89	DIODE RD5.1ESB2	
D623	8-719-911-19	DIODE 1SS119-25	
D624	8-719-063-70	DIODE D1NL20U	
D625	8-719-062-39	DIODE D4SBL20UF1	
D627	8-719-063-70	DIODE D1NL20U	
D628	8-719-083-49	DIODE P6KE200ASY	
D629	8-719-083-94	DIODE FUF4005	
D631	8-719-921-63	DIODE MTZJ-7.5B	
D632	8-719-063-70	DIODE D1NL20U	
D633	8-719-109-69	DIODE RD3.6ES-B2	
D638	8-719-083-92	DIODE YG802C09RF122	
D640	8-719-921-63	DIODE MTZJ-7.5B	
D649	8-719-978-33	DIODE UDZSTE-176.8B	
D1204	8-719-069-55	DIODE UDZSTE-175.6B	
D1205	8-719-081-90	DIODE PDZ22B-115	
D1230	8-719-074-43	DIODE BAS316-115	
		< FUSE >	
F601	⚠ 1-576-232-21	FUSE (H.B.C.) 5A/250V	
	*1-533-725-11	HOLDER, FUSE (F601)	
		< FERRITE BEAD >	
FB601	1-410-397-31	FERRITE 1.1UH	
FB602	1-410-397-31	FERRITE 1.1UH	
FB604	1-410-397-31	FERRITE 1.1UH	
FB605	1-410-397-31	FERRITE 1.1UH	
FB606	1-412-911-11	FERRITE 0UH	
FB607	1-412-911-11	FERRITE 0UH	
		< FILTER >	
FL201	1-239-803-21	FILTER, EMI	

REF.NO.	PART.NO	DESCRIPTION	REMARK
		< IC >	
IC001	8-759-837-20	IC TDA9394H/N1/4/0310	
IC002	8-742-180-20	HYB IC SBX 3081-51(30)	
IC004	8-759-575-72	IC M24C08-WMN6T	
IC201	6-700-410-01	IC MSP3410G-PP-B8	
IC401	8-759-665-11	IC LM393DT	
IC501	8-759-339-59	IC TDA8177	
IC531	8-759-665-11	IC LM393DT	
IC601	8-759-670-30	IC MCZ3001D	
IC602	8-749-016-19	IC SE135N-LF4	
IC604	8-759-668-87	IC BA41W12ST-V5	
IC608	8-759-591-02	IC L78L33ABZ-AP	
IC609	8-759-468-89	IC TOP209P	
IC1201	8-759-831-57	IC TDA7495S	
		< JACK >	
J401	1-766-296-21	CONNECTOR, DUAL SCART	
J402	1-770-329-11	JACK, PIN 3P	
J404	1-784-632-11	JACK, PIN 2P	
J1200	1-568-267-11	JACK	
		< COIL >	
L001	1-408-611-21	INDUCTOR 47UH	
L003	1-412-006-41	INDUCTOR 10UH	
L004	1-408-611-21	INDUCTOR 47UH	
L006	1-408-611-21	INDUCTOR 47UH	
L027	1-216-295-91	SHORT 0	
L101	1-412-534-41	INDUCTOR 56UH	
L102	1-408-611-21	INDUCTOR 47UH	
L103	1-412-002-41	INDUCTOR 4.7UH	
L104	1-412-002-41	INDUCTOR 4.7UH	
L201	1-408-602-21	INDUCTOR 8.2UH	
L202	1-408-591-21	INDUCTOR 1UH	
L203	1-408-602-21	INDUCTOR 8.2UH	
L205	1-408-591-21	INDUCTOR 1UH	
L206	1-535-143-61	LEAD, JUMPER (5.0MM)	
L207	1-408-591-21	INDUCTOR 1UH	
L401	1-410-993-42	INDUCTOR 1UH	
L403	1-410-993-42	INDUCTOR 1UH	
L404	1-410-993-42	INDUCTOR 1UH	
L405	1-535-143-61	LEAD, JUMPER (5.0MM)	
L406	1-535-143-61	LEAD, JUMPER (5.0MM)	
L410	1-216-025-91	RES-CHIP 100 5% 1/10W	
L430	1-412-002-41	INDUCTOR 4.7UH	
L446	1-410-993-42	INDUCTOR 1UH	
L448	1-410-993-42	INDUCTOR 1UH	
L501	1-414-187-31	INDUCTOR 47UH	
L502	1-412-531-41	INDUCTOR 33UH	
L503	1-412-521-41	INDUCTOR 4.7UH	

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

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REF.NO.	PART.NO	DESCRIPTION		REMARK
L504	1-535-143-61	LEAD, JUMPER	(5.0MM)	
L505	1-412-533-41	INDUCTOR	47UH	
L507	1-412-533-41	INDUCTOR	47UH	
L532	1-412-553-41	INDUCTOR	3.3MH	
L533	1-406-989-11	INDUCTOR	10MH	
L535	1-459-111-21	INDUCTOR	10MH	
L537	1-419-552-11	COIL, HORIZONTAL LINEARITY		
L538	1-419-263-11	COIL, WITH CORE		
L601	1-408-603-21	INDUCTOR	10UH	
L602	1-408-611-21	INDUCTOR	47UH	
L603	1-535-143-61	LEAD, JUMPER	(5.0MM)	
L1200	1-535-143-61	LEAD, JUMPER	(5.0MM)	
L1201	1-535-143-61	LEAD, JUMPER	(5.0MM)	
L1203	1-535-143-61	LEAD, JUMPER	(5.0MM)	
		< PHOTO COUPLER >		
PH601 ⚠	8-749-016-21	IC TCET1103G		
		< IC LINK >		
PS1201	1-533-597-31	LINK, IC		
		< TRANSISTOR >		
Q002	8-729-027-56	TRANSISTOR DTC143TKA-T146		
Q013	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q049	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q202	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q203	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q212	8-729-422-33	TRANSISTOR 2SD601A-Q-TX		
Q401	8-729-026-49	TRANSISTOR 2SA1037AK-T146		
Q409	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q411	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q532	8-729-053-33	TRANSISTOR IRF614-037		
Q533	8-729-051-82	TRANSISTOR BU4508DX-ON5210		
Q535	8-729-053-33	TRANSISTOR IRF614-037		
Q601	8-729-026-49	TRANSISTOR 2SA1037AK-T146		
Q602	8-729-119-78	TRANSISTOR 2SC2785-HFE		
Q603	8-729-029-56	TRANSISTOR DTA144ESA		
Q604	8-729-030-02	TRANSISTOR DTC144ESA		
Q606	8-729-053-36	TRANSISTOR 2SK2640-01MR		
Q607	8-729-053-36	TRANSISTOR 2SK2640-01MR		
Q608	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q609	8-729-026-49	TRANSISTOR 2SA1037AK-T146		
Q1210	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q1211	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q1230	8-729-027-56	TRANSISTOR DTC143TKA-T146		
Q1231	8-729-027-56	TRANSISTOR DTC143TKA-T146		
Q1232	8-729-026-50	TRANSISTOR 2SA1037AK-T146-QR		
Q1233	8-729-026-50	TRANSISTOR 2SA1037AK-T146-QR		

REF.NO.	PART.NO	DESCRIPTION			REMARK
		< RESISTOR >			
JR4	1-216-295-91	SHORT	0		
JR7	1-216-295-91	SHORT	0		
JR9	1-216-295-91	SHORT	0		
JR10	1-216-295-91	SHORT	0		
JR16	1-216-296-91	SHORT	0		
JR21	1-216-295-91	SHORT	0		
JR24	1-216-295-91	SHORT	0		
JR25	1-216-295-91	SHORT	0		
JR204	1-216-296-91	SHORT	0		
JR206	1-216-295-91	SHORT	0		
JR209	1-216-295-91	SHORT	0		
JR210	1-216-295-91	SHORT	0		
JR211	1-216-296-91	SHORT	0		
JR213	1-216-295-91	SHORT	0		
JR401	1-216-295-91	SHORT	0		
JR409	1-216-295-91	SHORT	0		
JR418	1-216-296-91	SHORT	0		
JR419	1-216-295-91	SHORT	0		
JR423	1-216-296-91	SHORT	0		
JR508	1-216-296-91	SHORT	0		
JR516	1-216-296-91	SHORT	0		
JR517	1-216-296-91	SHORT	0		
JR601	1-216-295-91	SHORT	0		
JR609	1-216-295-91	SHORT	0		
JR610	1-216-296-91	SHORT	0		
JR1209	1-216-295-91	SHORT	0		
R003	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R004	1-216-033-91	RES-CHIP	220	5%	1/10W
R005	1-216-041-91	RES-CHIP	470	5%	1/10W
R006	1-216-025-91	RES-CHIP	100	5%	1/10W
R007	1-216-025-91	RES-CHIP	100	5%	1/10W
R008	1-216-025-91	RES-CHIP	100	5%	1/10W
R009	1-216-049-91	RES-CHIP	1K	5%	1/10W
R010	1-216-049-91	RES-CHIP	1K	5%	1/10W
R011	1-216-295-91	SHORT	0		
R012	1-216-121-91	RES-CHIP	1M	5%	1/10W
R014	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R017	1-216-025-91	RES-CHIP	100	5%	1/10W
R018	1-208-820-91	METAL CHIP	39K	0.5%	1/10W
R020	1-216-077-91	RES-CHIP	15K	5%	1/10W
R022	1-216-089-91	RES-CHIP	47K	5%	1/10W
R023	1-216-031-91	RES-CHIP	180	5%	1/10W
R024	1-216-025-91	RES-CHIP	100	5%	1/10W
R025	1-216-025-91	RES-CHIP	100	5%	1/10W
R026	1-216-025-91	RES-CHIP	100	5%	1/10W
R027	1-216-025-91	RES-CHIP	100	5%	1/10W
R028	1-216-025-91	RES-CHIP	100	5%	1/10W

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REF.NO.	PART.NO	DESCRIPTION			REMARK
R029	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R030	1-216-821-91	RES-CHIP	1K	5%	1/16W
R031	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R032	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R033	1-216-073-91	RES-CHIP	10K	5%	1/10W
R034	1-216-121-91	RES-CHIP	1M	5%	1/10W
R035	1-216-101-91	RES-CHIP	150K	5%	1/10W
R036	1-216-083-91	RES-CHIP	27K	5%	1/10W
R039	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R040	1-216-033-91	RES-CHIP	220	5%	1/10W
R041	1-216-025-91	RES-CHIP	100	5%	1/10W
R042	1-216-025-91	RES-CHIP	100	5%	1/10W
R044	1-216-073-91	RES-CHIP	10K	5%	1/10W
R045	1-216-025-91	RES-CHIP	100	5%	1/10W
R046	1-216-025-91	RES-CHIP	100	5%	1/10W
R047	1-216-025-91	RES-CHIP	100	5%	1/10W
R048	1-216-073-91	RES-CHIP	10K	5%	1/10W
R049	1-216-049-91	RES-CHIP	1K	5%	1/10W
R050	1-216-025-91	RES-CHIP	100	5%	1/10W
R051	1-216-295-91	SHORT	0		
R053	1-216-077-91	RES-CHIP	15K	5%	1/10W
R055	1-216-025-91	RES-CHIP	100	5%	1/10W
R056	1-216-081-91	RES-CHIP	22K	5%	1/10W
R060	1-216-025-91	RES-CHIP	100	5%	1/10W
R061	1-216-025-91	RES-CHIP	100	5%	1/10W
R062	1-216-077-91	RES-CHIP	15K	5%	1/10W
R063	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R064	1-216-069-91	RES-CHIP	6.8K	5%	1/10W
R065	1-216-295-91	SHORT	0		
R066	1-216-053-91	RES-CHIP	1.5K	5%	1/10W
R067	1-216-073-91	RES-CHIP	10K	5%	1/10W
R070	1-216-025-91	RES-CHIP	100	5%	1/10W
R071	1-216-049-91	RES-CHIP	1K	5%	1/10W
R072	1-216-295-91	SHORT	0		
R074	1-216-073-91	RES-CHIP	10K	5%	1/10W
R090	1-216-057-91	RES-CHIP	2.2K	5%	1/10W
R092	1-216-073-91	RES-CHIP	10K	5%	1/10W
R094	1-216-025-91	RES-CHIP	100	5%	1/10W
R095	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R096	1-216-025-91	RES-CHIP	100	5%	1/10W
R101	1-216-093-91	RES-CHIP	68K	5%	1/10W
R102	1-216-097-91	RES-CHIP	100K	5%	1/10W
R104	1-216-295-91	SHORT	0		
R105	1-414-813-21	INDUCTOR	0UH		
R106	1-215-900-51	METAL OXIDE	22K	5%	2W
R107	1-216-025-91	RES-CHIP	100	5%	1/10W
R108	1-216-025-91	RES-CHIP	100	5%	1/10W
R201	1-216-025-91	RES-CHIP	100	5%	1/10W
R202	1-216-073-91	RES-CHIP	10K	5%	1/10W
R211	1-216-081-91	RES-CHIP	22K	5%	1/10W

REF.NO.	PART.NO	DESCRIPTION			REMARK
R212	1-216-069-91	RES-CHIP	6.8K	5%	1/10W
R213	1-216-081-91	RES-CHIP	22K	5%	1/10W
R214	1-216-041-91	RES-CHIP	470	5%	1/10W
R215	1-216-037-91	RES-CHIP	330	5%	1/10W
R216	1-216-097-91	RES-CHIP	100K	5%	1/10W
R217	1-216-222-91	RES-CHIP	10K	5%	1/8W
R220	1-216-031-91	RES-CHIP	180	5%	1/10W
R221	1-216-190-91	RES-CHIP	470	5%	1/8W
R232	1-216-025-91	RES-CHIP	100	5%	1/10W
R233	1-216-069-91	RES-CHIP	6.8K	5%	1/10W
R234	1-216-069-91	RES-CHIP	6.8K	5%	1/10W
R235	1-216-069-91	RES-CHIP	6.8K	5%	1/10W
R236	1-216-069-91	RES-CHIP	6.8K	5%	1/10W
R238	1-216-025-91	RES-CHIP	100	5%	1/10W
R246	1-260-107-91	CARBON	4.7K	5%	1/2W
R248	1-249-429-91	CARBON	10K	5%	1/4W
R249	1-216-097-91	RES-CHIP	100K	5%	1/10W
R250	1-216-230-91	RES-CHIP	22K	5%	1/8W
R251	1-216-069-91	RES-CHIP	6.8K	5%	1/10W
R252	1-216-069-91	RES-CHIP	6.8K	5%	1/10W
R401	1-410-993-42	INDUCTOR	1UH		
R402	1-216-041-91	RES-CHIP	470	5%	1/10W
R403	1-216-113-91	RES-CHIP	470K	5%	1/10W
R404	1-216-113-91	RES-CHIP	470K	5%	1/10W
R405	1-216-864-91	SHORT	0		
R406	1-216-296-91	SHORT	0		
R407	1-216-022-91	RES-CHIP	75	5%	1/10W
R408	1-216-022-91	RES-CHIP	75	5%	1/10W
R409	1-216-025-91	RES-CHIP	100	5%	1/10W
R410	1-216-025-91	RES-CHIP	100	5%	1/10W
R411	1-216-022-91	RES-CHIP	75	5%	1/10W
R412	1-216-025-91	RES-CHIP	100	5%	1/10W
R413	1-216-113-91	RES-CHIP	470K	5%	1/10W
R414	1-216-022-91	RES-CHIP	75	5%	1/10W
R415	1-216-022-91	RES-CHIP	75	5%	1/10W
R416	1-216-027-91	RES-CHIP	120	5%	1/10W
R417	1-216-113-91	RES-CHIP	470K	5%	1/10W
R418	1-216-113-91	RES-CHIP	470K	5%	1/10W
R419	1-216-022-91	RES-CHIP	75	5%	1/10W
R420	1-216-073-91	RES-CHIP	10K	5%	1/10W
R421	1-216-049-91	RES-CHIP	1K	5%	1/10W
R422	1-216-864-91	SHORT	0		
R423	1-216-113-91	RES-CHIP	470K	5%	1/10W
R424	1-216-113-91	RES-CHIP	470K	5%	1/10W
R425	1-216-085-91	RES-CHIP	33K	5%	1/10W
R426	1-216-073-91	RES-CHIP	10K	5%	1/10W
R427	1-216-113-91	RES-CHIP	470K	5%	1/10W
R428	1-216-073-91	RES-CHIP	10K	5%	1/10W
R429	1-216-089-91	RES-CHIP	47K	5%	1/10W
R430	1-216-073-91	RES-CHIP	10K	5%	1/10W

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

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REF.NO.	PART.NO	DESCRIPTION			REMARK
R431	1-216-073-91	RES-CHIP	10K	5%	1/10W
R433	1-216-073-91	RES-CHIP	10K	5%	1/10W
R434	1-216-073-91	RES-CHIP	10K	5%	1/10W
R435	1-216-295-91	SHORT	0		
R438	1-216-022-91	RES-CHIP	75	5%	1/10W
R439	1-216-022-91	RES-CHIP	75	5%	1/10W
R440	1-216-049-91	RES-CHIP	1K	5%	1/10W
R441	1-216-051-91	RES-CHIP	1.2K	5%	1/10W
R442	1-216-085-91	RES-CHIP	33K	5%	1/10W
R443	1-216-073-91	RES-CHIP	10K	5%	1/10W
R444	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R446	1-216-113-91	RES-CHIP	470K	5%	1/10W
R447	1-216-295-91	SHORT	0		
R448	1-216-113-91	RES-CHIP	470K	5%	1/10W
R449	1-216-295-91	SHORT	0		
R450	1-216-041-91	RES-CHIP	470	5%	1/10W
R451	1-216-041-91	RES-CHIP	470	5%	1/10W
R453	1-216-171-91	RES-CHIP	75	5%	1/8W
R454	1-216-001-91	RES-CHIP	10	5%	1/10W
R455	1-216-295-91	SHORT	0		
R460	1-216-049-91	RES-CHIP	1K	5%	1/10W
R461	1-216-022-91	RES-CHIP	75	5%	1/10W
R462	1-216-029-91	RES-CHIP	150	5%	1/10W
R501	1-216-091-91	RES-CHIP	56K	5%	1/10W
R502	1-216-073-91	RES-CHIP	10K	5%	1/10W
R503	1-215-888-21	METAL OXIDE	220	5%	2W
R504	1-249-385-91	CARBON	2.2	5%	1/4W
R505	1-216-677-91	METAL CHIP	12K	0.5%	1/10W
R506	1-208-796-91	METAL CHIP	3.9K	0.5%	1/10W
R507	1-216-349-51	METAL OXIDE	1	5%	1W
R508	1-216-677-91	METAL CHIP	12K	0.5%	1/10W
R509	1-208-796-91	METAL CHIP	3.9K	0.5%	1/10W
R510	1-216-113-91	RES-CHIP	470K	5%	1/10W
R512	1-249-382-91	CARBON	1.2	5%	1/4W
R514	1-249-377-91	CARBON	0.47	5%	1/4W
R515	1-249-377-91	CARBON	0.47	5%	1/4W
R516	1-214-907-81	METAL	56K	1%	1/2W
R517	1-215-461-91	METAL	47K	1%	1/4W
R518	1-216-059-91	RES-CHIP	2.7K	5%	1/10W
R519	1-216-129-91	RES-CHIP	2.2M	5%	1/10W
R520	1-215-883-21	METAL OXIDE	33	5%	2W
R523	1-216-117-91	RES-CHIP	680K	5%	1/10W
R524	1-216-083-91	RES-CHIP	27K	5%	1/10W
R525	1-216-057-91	RES-CHIP	2.2K	5%	1/10W
R526	1-216-089-91	RES-CHIP	47K	5%	1/10W
R527	1-216-079-91	RES-CHIP	18K	5%	1/10W
R528	1-216-097-91	RES-CHIP	100K	5%	1/10W
R529	1-216-073-91	RES-CHIP	10K	5%	1/10W
R530	1-216-085-91	RES-CHIP	33K	5%	1/10W
R531	1-216-057-91	RES-CHIP	2.2K	5%	1/10W

REF.NO.	PART.NO	DESCRIPTION			REMARK
R532	1-216-085-91	RES-CHIP	33K	5%	1/10W
R533	1-216-081-91	RES-CHIP	22K	5%	1/10W
R534	1-216-117-91	RES-CHIP	680K	5%	1/10W
R535	1-216-097-91	RES-CHIP	100K	5%	1/10W
R538	1-535-143-71	LEAD, JUMPER (7.5MM)			
R539	1-215-892-81	METAL OXIDE	1K	5%	2W
R540	1-215-887-21	METAL OXIDE	150	5%	2W
R542	1-216-121-91	RES-CHIP	1M	5%	1/10W
R543	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R544	1-216-103-91	RES-CHIP	180K	5%	1/10W
R545	1-216-129-91	RES-CHIP	2.2M	5%	1/10W
R546	1-215-920-51	METAL OXIDE	3.3K	5%	3W
R547	1-215-886-21	METAL OXIDE	100	5%	2W
R548	1-212-849-61	FUSIBLE	4.7	5%	1/4W
R549	1-216-369-21	METAL OXIDE	1	5%	2W
R551	1-215-873-21	METAL OXIDE	4.7K	5%	1W
R552	1-216-848-91	RES-CHIP	180K	5%	1/16W
R553	1-249-381-91	CARBON	1	5%	1/4W
R554	1-216-105-91	RES-CHIP	220K	5%	1/10W
R556	1-215-920-51	METAL OXIDE	3.3K	5%	3W
R557	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R558	1-216-025-91	RES-CHIP	100	5%	1/10W
R559	1-249-428-91	CARBON	8.2K	5%	1/4W
R560	1-249-429-91	CARBON	10K	5%	1/4W
R561	1-216-129-91	RES-CHIP	2.2M	5%	1/10W
R562	1-216-117-91	RES-CHIP	680K	5%	1/10W
R565	1-216-049-91	RES-CHIP	1K	5%	1/10W
R568	1-215-920-51	METAL OXIDE	3.3K	5%	3W
R583	1-216-081-91	RES-CHIP	22K	5%	1/10W
R589	1-216-295-91	SHORT	0		
R591	1-215-892-51	METAL OXIDE	1K	5%	2W
R595	1-249-377-91	CARBON	0.47	5%	1/4W
R600	1-211-964-91	METAL CHIP	33	0.5%	1/10W
R601	1-208-776-91	METAL CHIP	560	0.5%	1/10W
R602	1-202-962-11	CEMENTED	3.3	5%	10W
R603	1-220-926-21	FUSIBLE	0.47	10%	1/2W
R605	1-216-049-91	RES-CHIP	1K	5%	1/10W
R606 ⚠	1-202-719-91	SOLID	1M	10%	1/2W
R608	1-216-073-91	RES-CHIP	10K	5%	1/10W
R609	1-216-677-91	METAL CHIP	12K	0.5%	1/10W
R610	1-215-481-91	METAL	330K	1%	1/4W
R611	1-216-059-91	RES-CHIP	2.7K	5%	1/10W
R612	1-249-429-91	CARBON	10K	5%	1/4W
R613 ⚠	1-219-720-91	METAL	8.2M	5%	1W
R615	1-215-385-91	METAL	33	1%	1/4W
R618	1-247-889-91	CARBON	270K	5%	1/4W
R619	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R621	1-216-113-91	RES-CHIP	470K	5%	1/10W
R622	1-216-073-91	RES-CHIP	10K	5%	1/10W
R623	1-216-081-91	RES-CHIP	22K	5%	1/10W

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

REF.NO.	PART.NO	DESCRIPTION			REMARK
R624	1-216-001-91	RES-CHIP	10	5%	1/10W
R625	1-216-073-91	RES-CHIP	10K	5%	1/10W
R627	1-249-389-91	CARBON	4.7	5%	1/4W
R628	1-247-791-91	CARBON	22	5%	1/4W
R629	1-216-073-91	RES-CHIP	10K	5%	1/10W
R632	1-249-417-91	CARBON	1K	5%	1/4W
R633	1-215-481-91	METAL	330K	1%	1/4W
R634	1-217-625-11	METAL	0.05	10%	2W
R635	1-260-300-71	CARBON	4.7	5%	1/2W
R636	1-249-413-91	CARBON	470	5%	1/4W
R637	1-216-041-91	RES-CHIP	470	5%	1/10W
R639	1-208-814-91	METAL CHIP	22K	0.5%	1/10W
R640	1-208-830-91	METAL CHIP	100K	0.5%	1/10W
R641	1-216-097-91	RES-CHIP	100K	5%	1/10W
R642	1-249-405-91	CARBON	100	5%	1/4W
R643	1-216-089-91	RES-CHIP	47K	5%	1/10W
R645	1-216-073-91	RES-CHIP	10K	5%	1/10W
R647	1-216-049-91	RES-CHIP	1K	5%	1/10W
R648	1-215-481-91	METAL	330K	1%	1/4W
R649	1-208-805-91	METAL CHIP	9.1K	0.5%	1/10W
R650	1-208-758-91	METAL CHIP	100	0.5%	1/10W
R651	1-220-926-21	FUSIBLE	0.47	10%	1/2W
R652	1-216-081-91	RES-CHIP	22K	5%	1/10W
R653	1-216-073-91	RES-CHIP	10K	5%	1/10W
R654	1-216-001-91	RES-CHIP	10	5%	1/10W
R656	1-216-365-51	METAL OXIDE	0.47	5%	2W
R660	1-247-807-91	CARBON	100	5%	1/4W
R1200	1-260-093-81	CARBON	330	5%	1/2W
R1201	1-260-093-81	CARBON	330	5%	1/2W
R1207	1-216-077-91	RES-CHIP	15K	5%	1/10W
R1208	1-216-067-91	RES-CHIP	5.6K	5%	1/10W
R1209	1-216-073-91	RES-CHIP	10K	5%	1/10W
R1210	1-216-077-91	RES-CHIP	15K	5%	1/10W
R1211	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1212	1-216-057-91	RES-CHIP	2.2K	5%	1/10W
R1213	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1214	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1215	1-216-049-91	RES-CHIP	1K	5%	1/10W
R1230	1-216-041-91	RES-CHIP	470	5%	1/10W
R1231	1-216-113-91	RES-CHIP	470K	5%	1/10W
R1232	1-216-041-91	RES-CHIP	470	5%	1/10W
R1233	1-216-113-91	RES-CHIP	470K	5%	1/10W
R1235	1-216-073-91	RES-CHIP	10K	5%	1/10W
R1236	1-216-073-91	RES-CHIP	10K	5%	1/10W

< RELAY >

REF.NO.	PART.NO	DESCRIPTION
RY601	1-755-388-91	RELAY (AC POWER)

< SWITCH >

REF.NO.	PART.NO	DESCRIPTION
S001	1-692-431-21	SWITCH, TACTIL
S002	1-692-431-21	SWITCH, TACTIL
S003	1-692-431-21	SWITCH, TACTIL
S004	1-692-431-21	SWITCH, TACTIL
S005	1-692-431-21	SWITCH, TACTIL
S006	1-692-431-21	SWITCH, TACTIL
S601 ⚠	1-571-433-31	SWITCH, PUSH (AC POWER)
SW532	1-572-707-21	SWITCH, LEVER

< TRANSFORMER >

REF.NO.	PART.NO	DESCRIPTION
T511 ⚠	1-453-314-31	TRANSFORMER ASSY, FLYBACK
T531	1-437-210-21	TRANSFORMER, HORIZONTAL DRIVE
T601 ⚠	1-427-962-11	TRANSFORMER, LINE FILTER
T602 ⚠	1-431-732-31	TRANSFORMER, CONVERTER (SRT)
T603 ⚠	1-435-976-11	TRANSFORMER, CONVERTER (PIT)

< THERMISTOR >

REF.NO.	PART.NO	DESCRIPTION
TH601	1-803-586-41	THERMISTOR
THP601 ⚠	1-803-951-11	THERMISTOR, PTC

< VARISTOR >

REF.NO.	PART.NO	DESCRIPTION
VDR601	1-803-830-31	VARISTOR (ERZV14D621)

< CRYSTAL >

REF.NO.	PART.NO	DESCRIPTION
X001	1-578-774-71	VIBRATOR, CRYSTAL
X201	1-760-628-21	VIBRATOR, CRYSTAL

A Board Variant Parts KV-21FX30

< TUNER >

REF.NO.	PART.NO	DESCRIPTION
TU101	8-598-535-10	FRONTEND BTF-EF411 (KV-21FX30B)
	8-598-533-00	FRONTEND BTF-EC411 (KV-21FX30E/21FX30K)

*A-1639-020-A C Board, Complete

REF.NO.	PART.NO	DESCRIPTION
	4-382-854-01	SCREW (M3X8), P, SW (+)
	4-382-854-01	SCREW (M3X8), P, SW (+)

< CAPACITOR >

REF.NO.	PART.NO	DESCRIPTION			REMARK
C701	1-136-189-91	MYLAR	0.1UF	10.00%	250V
C702	1-126-964-91	ELECT	10UF	20.00%	50V
C703	1-101-004-91	CERAMIC	0.01UF		50V
C708	1-162-114-51	CERAMIC	0.0047UF		2KV
C710	1-107-957-91	ELECT	1UF	20.00%	250V
C1803	1-101-005-91	CERAMIC	0.022UF		50V
C1804	1-126-964-91	ELECT	10UF	20.00%	50V
C1805	1-101-880-91	CERAMIC	47PF	5.00%	50V

C

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

REF.NO.	PART.NO	DESCRIPTION	REMARK
		< CONNECTOR >	
CN702	1-695-915-21	TAB (CONTACT)	
CN703	*1-564-510-51	PLUG, CONNECTOR 7P	
CN706	1-695-915-21	TAB (CONTACT)	
CN707	*1-564-508-51	PLUG, CONNECTOR 5P	
CN1801	*1-564-506-51	PLUG, CONNECTOR 3P	
		< DIODE >	
D701	8-719-991-33	DIODE 1SS133T-77	
D702	8-719-901-83	DIODE 1SS83	
D704	8-719-110-41	DIODE RD15ES-B2	
D705	8-719-302-43	DIODE EL1Z	
D706	8-719-901-83	DIODE 1SS83	
D707	8-719-901-83	DIODE 1SS83	
D708	8-719-109-97	DIODE RD6.8ES-B2	
D709	8-719-109-97	DIODE RD6.8ES-B2	
D710	8-719-109-97	DIODE RD6.8ES-B2	
D1801	8-719-048-53	MTZJ-T-72-10B	
D1802	8-719-048-53	MTZJ-T-72-10B	
D1803	8-719-048-53	MTZJ-T-72-10B	
		< IC >	
IC701	8-759-491-92	IC TDA6107Q-N1	
IC1801	8-759-603-37	IC M5216P	
		< SOCKET >	
J701	⚠ 1-251-595-11	SOCKET, CRT	
		< COIL >	
L704	1-414-183-31	INDUCTOR 10UH	
		< RESISTOR >	
R701	1-247-903-91	CARBON 1M 5%	1/4W
R702	1-249-429-91	CARBON 10K 5%	1/4W
R703	1-535-143-61	LEAD, JUMPER (5.0MM)	
R704	1-216-372-51	METAL OXIDE 1.8 5%	2W
R705	1-215-869-21	METAL OXIDE 1K 5%	1W
R706	1-249-411-91	CARBON 330 5%	1/4W
R712	1-215-869-21	METAL OXIDE 1K 5%	1W
R716	1-249-411-91	CARBON 330 5%	1/4W
R718	1-202-814-91	SOLID 33K 10%	1/2W
R726	1-215-869-21	METAL OXIDE 1K 5%	1W
R727	1-249-411-91	CARBON 330 5%	1/4W
R741	1-202-549-81	SOLID 100 20%	1/2W
R1801	1-249-441-91	CARBON 100K 5%	1/4W
R1805	1-249-429-91	CARBON 10K 5%	1/4W
R1806	1-247-899-91	CARBON 680K 5%	1/4W
R1807	1-249-429-91	CARBON 10K 5%	1/4W
R1808	1-249-429-91	CARBON 10K 5%	1/4W
R1809	1-249-429-91	CARBON 10K 5%	1/4W
R1810	1-249-429-91	CARBON 10K 5%	1/4W
		< VARIABLE RESISTOR >	
RV702	1-225-952-11	RES, ADJ, METAL FILM 110M	

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part numbers specified in the parts list.

MISCELLANEOUS

REF.NO.	PART.NO	DESCRIPTION	REMARK
⚠	1-571-433-31	SWITCH, PUSH (AC POWER)	
⚠	1-765-286-11	CORD, POWER	
⚠	1-453-314-31	TRANSFORMER ASSY, FLYBACK	
	8-598-535-10	FRONTEND (BTF-EF411) (KV-21FX30B)	
	8-598-533-00	FRONTEND (BTF-EC411) (KV-21FX30E/21FX30K)	
	1-505-924-11	SPEAKER (15X6.5CM)	
⚠	8-738-836-05	PICTURE TUBE (A51LPT60X)	
	8-451-505-41	DEFLECTION YOKE (Y21RSA-L)	
	1-452-728-61	COIL, NA ROTATION (RT-154)	
⚠	1-419-772-11	COIL DEGAUSSING	
⚠	1-251-839-21	CAP ASSY, HIGH VOLTAGE	
	1-452-094-11	MAGNET, ROTATABLE DISK; 15MM Ø	
	1-452-032-11	MAGNET, DISK; 10MM Ø	

ACCESSORIES AND PACKAGING MATERIALS

REF.NO.	PART.NO	DESCRIPTION	REMARK
	4-206-090-21	INSTRUCTION MANUAL (KV-21FX30B) (GERMAN/FRENCH/ITALIAN/DUTCH)	
	4-206-090-11	INSTRUCTION MANUAL (KV-21FX30E) (GERMAN/GREEK/TURKISH)	
	4-206-090-41	INSTRUCTION MANUAL (KV-21FX30E) (ITALIAN)	
	4-206-090-51	INSTRUCTION MANUAL (KV-21FX30E) (DANISH/SPANISH/NORWEGIAN/PORTUGUESE/ SWEDISH/FINNISH)	
	4-206-090-31	INSTRUCTION MANUAL (KV-21FX30K) (BULGARIAN/CZECH/ENGLISH/HUNGARIAN/ POLISH/RUSSIAN)	
	*4-039-905-11	BAG, PROTECTION	
	*4-206-068-01	INDIVIDUAL CARTON	

REMOTE COMMANDER

REF.NO.	PART.NO	DESCRIPTION	REMARK
	1-418-476-21	COMMANDER, STANDARD (RM-887)	

TRACE

A new TV Repair Assistance Tool that combines ease of use and powerful PC software tools to allow you to save valuable time during many TV repairs.



The TRACE interface connects to the PC's serial port. It provides connection to the TV's I^2C bus and can be provided with an InfraRed transmitter (optional).

The interface is powered by a standard 9 V PP3 battery for portable use, and can also be powered by an external 9V/25mA DC power supply.

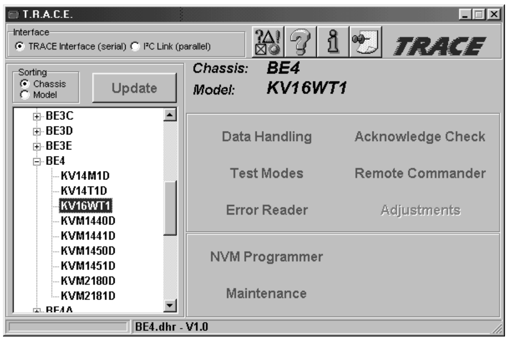
The TRACE software that is supplied with the interface allows you to:

- Read, restore and compare NVM contents via the I^2C bus
- Acknowledge check of all I^2C devices in the TV set
- Read Error Codes (emulation of the Error Reader tool)

With the optional IR Add-on kit, the following features can be added:

- Remote Commander emulation
- User programmable Functional Check through Infrared
- Fast and documented Test Mode setting of all Sony TV chassis

Additional features such as Adjustments and Troubleshooting are available in chassis-dependent software modules. Please contact your local Sony Service organisation for the latest information.



Note: For workshops already using the existing I^2C Link parallel port interface (9-948-320-30), this software can be used as well, replacing the TV Data Handling software (9-948-340-50), but Error Reader and IR functions can only be accessed with the TRACE interface.

Partnumbers:		
	TRACE Starter Kit (TRACE interface + software):	9-948-320-70
	TRACE Software (for users of the I^2C Link interface):	9-948-340-80
	TRACE IR Add-on (IR interface + Remote Commander software):	9-948-320-80

PC requirements: IBM-compatible PC with operating system Windows95, Windows98, or WindowsNT*.

* WindowsNT only supported with TRACE interface

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